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GOOD BUSINESS FORESIGHT INCLUDES TORNADO INSURANCE

Photo By P. & A.
If the Property Owner Has Understood the Co-Insurance Clause His Loss Is Probably Covered Completely in Such a Fire as This

The Co-Insurance Clause

Discussing In Non-Technical Terms Just What this Puzzling Provision Means, and the Reason for It

By AVARD L. BISHOP
Professor of Business Administration
Yale University

ONE of the endorsements which is commonly used in preparing fire insurance policies is the so-called coinsurance clause; probably no endorsement is more poorly understood. There are other clauses which have virtually the same practical effect when attached to a policy, such as the percentage-value clause, the average clause, and the reduced-rate average clause. Each of these has a wording of its own, but all of these clauses have practically the same significance. The so-called coinsurance clause may be taken as typical of the group. The purpose of this article is to explain the nature of coinsurance and its practical workings, and to justify the use of the coinsurance clause by insurance companies.

By way of introduction, it may be well to state that the experience of certain fire insurance companies shows that, roughly, only about four or five per cent of fires result in total losses. Moreover, something like two-thirds of all the fires occurring result in losses of not more than $100 each. Another statement commonly made when referring to the frequency of fires and their inroads upon property values, is that something like seventy per cent of the fire losses are for sums less than one-tenth of the value of the property concerned. These statements which are intended to represent tendencies rather than absolute facts indicate that the chances are that if one does have a fire the loss will be only partial, and that it will be for a relatively small proportion of the value insured. This would be the situation in cities with good fire-fighting apparatus; in country districts, with wooden houses and with little or no fire-protective devices, when a fire starts the loss is more likely to be a total loss.

ONE who is familiar with figures such as those just mentioned, especially if his factor of caution is small, would be inclined to take a chance regarding his fire insurance and, to this end, would buy coverage for only a small fraction of the fair value of the property, say twenty or twenty-five per cent. Another whose factor of caution was large would reason that he would be pretty sure to be one of those who would have a substantial loss, if a fire started, so he would voluntarily insure his property for nearly or quite its full value. Some would steer a middle course, and, other things being equal, would voluntarily buy an amount of insurance coverage somewhere between twenty and one hundred per cent of the property value, depending somewhat upon their respective factors of caution. But the companies, as a rule, desire not to discriminate in the matter of rates for similar risks, as between different persons, whether insurance is bought for a small or a large percentage of the property value, so to accomplish the purpose of making all purchasers of insurance contribute an equitable amount of the fund out of which losses may

be paid, the coinsurance clause was devised.

The text of this clause reads as follows:

"It is hereby agreed that the assured shall maintain insurance during the life of this policy upon the property hereby insured to the extent of at least ..... per cent of the actual cash value at the time of the fire; and that failing so to do, the assured shall to the extent of such deficit bear his proportion of any loss."

The number most commonly inserted in line four is eighty, although the principle would be the same if this were seventy-five, eighty-five, ninety or even one hundred per cent. In this paper we shall assume eighty per cent to be the amount of coverage required by the coinsurance clause.

It is obvious from the above that the purpose of the coinsurance clause is to encourage buyers of fire insurance to purchase coverage for *more than a small percentage* of the fair cash value of the risks involved. Even though the coinsurance clause is attached to the policy, the owner may carry less than eighty per cent coverage if he so desires; but, should a fire occur, he will, under the terms of the clause, have to stand a certain definite proportion of the loss suffered. If he carries only one-half of the insurance required by the coinsurance agreement, he must bear half of the loss suffered; if he carries three-fourths of the required amount he must bear one-fourth of the loss, and so on.

A PRACTICAL example will help to make the matter clear. John Doe owns a building worth $8000. A fire insurance company insures John Doe against fire for $4000, but an eighty per cent coinsurance clause is attached to the policy. John Doe, in order to comply with this clause, should have taken at least $6400 insurance, for eighty per cent of $8000 is $6400. Therefore, when a loss of $1000 occurs, the company pays only 4000/6000 of the loss = ⅝ of $1000 = $615. John Doe was coinsurer for ⅜ of the loss. Had he bought $6400 insurance instead of $4000 he would have been indemnified for his total loss, namely $1000. As the clause clearly infers, the failure to buy at least the agreed percentage of coverage makes the insured a coinsurer for an amount represented by his proportional deficiency.

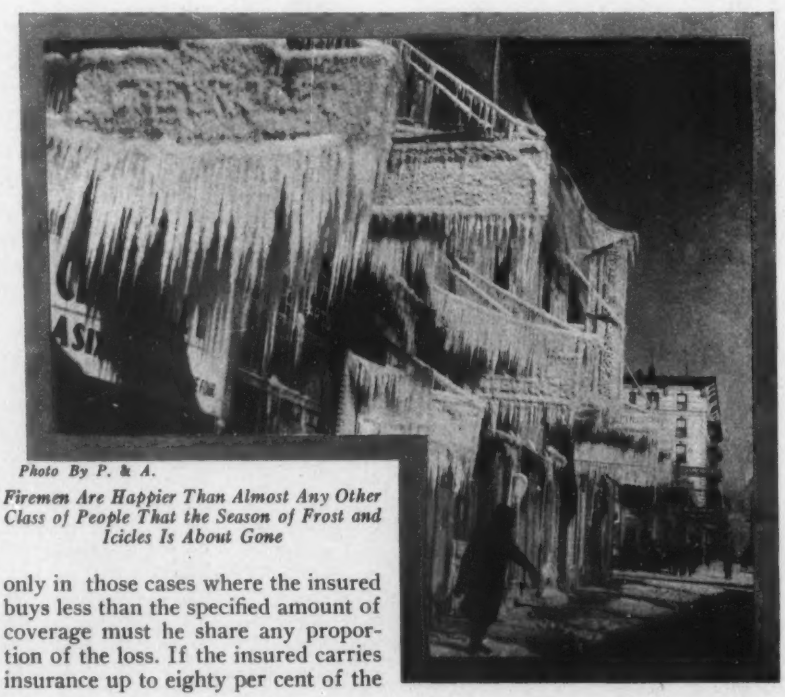
Let us now assume that John Doe buys $7000 insurance. This is even more than required by the coinsurance clause, so when a fire causing damage of $6000, let us say, occurs, the company pays the full amount. This is because John Doe has met the full requirement of the coinsurance agreement. From this last example we may deduce an important rule regarding coinsurance, namely, the clause has no effect whatsoever when attached to a policy, provided the amount of insurance is equal to or exceeds the required percentage of the value of the insured property.

There is one other situation under which the coinsurance clause, when attached to a fire insurance policy, has no effect whatsoever. This is when the amount of the loss is at least equal to or actually exceeds eighty per cent of the property value insured. An example will illustrate this point. John Doe's property is worth $5000 and it is insured for $3000 with eighty per cent coinsurance. A loss of $4500 occurs. This being in excess of eighty per cent of the fair value of the property the clause becomes inoperative. John Doe, therefore, collects from the fire insurance company involved the sum of $3000.

A very large percentage of persons whom we have questioned in this matter, understand the coinsurance clause to mean that, if it is attached to a policy, the company in *every instance* will pay the insured only a part of the loss suffered. This conception is entirely wrong and is contrary to the meaning and purpose of the coinsurance clause. It says, in effect, that only in those cases where the insured buys less than the specified amount of coverage must he share any proportion of the loss. If the insured carries insurance up to eighty per cent of the actual cash value of the property at the time of the loss, and if the fire causes a partial loss, the company under the terms of the policy will indemnify the insured for the total amount of the loss suffered up to the face value of the policy. Also, as already explained, the clause is of no effect when the amount of the loss exceeds eighty per cent of the value covered.

IT IS the common custom in this country for any person desiring to acquire goods and services to purchase either a small or a large amount in accordance with his desire. In general accordance with this idea, the buyer of fire insurance often makes the claim that it is *he* rather than the *company* that should determine how much insurance coverage he should carry; it is his main concern, it is contended, rather than the company's. The insurance company is perfectly willing to sell any purchaser of its service any amount of insurance he wishes to carry, provided over-insurance is not desired; but it insists on exercising the right to attach the coinsurance clause to the policy so purchased. When it is attached to the policy the fire insurance company, in effect, says to the purchaser—"If you buy less insurance than what we consider to be a fair amount for you to buy, you must be a coinsurer for a part of the risk."

(Continued on page 12)



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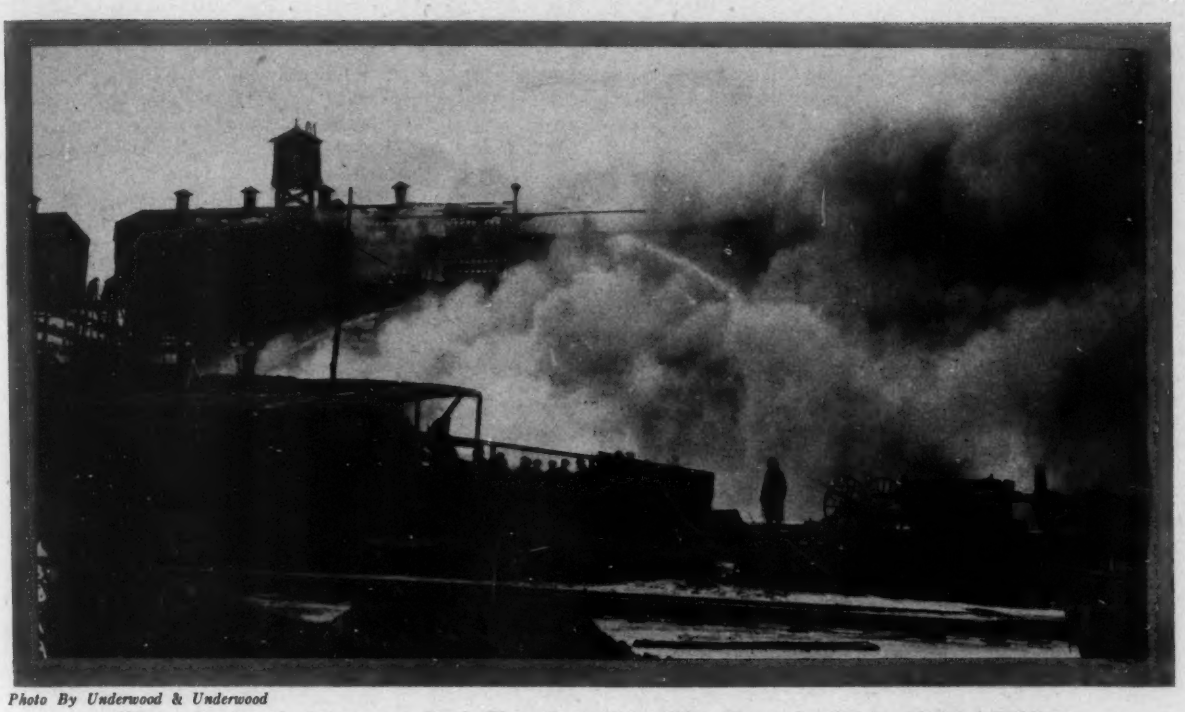
Firemen Are Happier Than Almost Any Other Class of People That the Season of Frost and Icicles Is About Gone



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What a Comfortable Appearance a Sturdy Water Tank Makes When Fire Is Leaping In Adjoining Buildings

Water For Extinguishing Fires

Comprehensive Study of Water Supply Sources and the Means of Storing and Distributing Water Against a Time of Need

By E. L. SANDERS

Vice-President and Treasurer Merchants and Farmers Mutual Fire Insurance Company of Worcester, Mass.

PART I

THE rain-fall is the source of all water supply. The average fall in this section (New England) is about forty-five (45) inches per annum, of which thirty-four (34) inches are lost through evaporation, leaving some eleven (11) inches which form our water supply for all purposes.

We take this supply from the following sources:—(1) Springs, (2) Rivers, (3) Lakes, (4) Wells.

System of Distribution

THIS includes Aqueducts, Conduits, Impounding Reservoirs, Equalizing and Storage Reservoirs, Pumping Stations and Distributing Pipes.

The Distributing Systems are graded as follows, in order of preference as to safety:—

Gravity into Distributing Pipes.

Pumping to Reservoir and then Gravity to Distributing Pipes.

Pumping to Standpipe or Tank and then Gravity to Distributing Pipes.

Direct Pumping to Distributing Pipes.

Combination of the above.

The piping system is essentially the same in all of these systems, the simplest form being a long run of single pipe, tapering in size, from the source of supply and laid through the main street of the community. Such arrangement is liable to be found in localities up to 5,000 people.

Next, we have the so-called Herring-Bone system. This is common in localities where the growth of the community is such as to require water supplies in lateral and parrallel streets to the main thoroughfare. It gets its name from its resemblance to a herring bone and is common in communities up to 100,000 and is a part of all systems in outlying districts.

The so-called gridiron system with two or more sources of supply or two or more feed pipes is the most efficient. This system is one where the lateral and parallel pipes are connected at both ends by a pipe that surrounds the outside ends of all the pipes and is connected with these so that there are no dead ends or no pipes that are fed at one end only. Pipes fed at both ends give double the supply of water, so that inside of the gridiron, we may look for double

THE author wishes to acknowledge the following as sources from which data has been taken for this article:

Public Water Supplies by Turneaure and Russell.

Handbook of Fire Protection, Crosby-Fiske-Forister.

New England Water Works Assn. Proceeding April 12th, 1911. Paper by Mr. E. V. French.

Standard Schedule for Grading Cities and Towns. National Board of Fire Underwriters.

Sprinkler Systems, Gorham Dana.

Standpipe and Hose Systems—National Fire Protection Assn.

First Aid Fire Appliances—National Fire Protection Assn.

the amount of water to be had outside the grid.

The pipes are usually of cast iron but may be of other materials.

The quantity of water, pressure and local conditions govern pipe sizes and general lay-out of system. The larger the pipe, the less the loss by friction and the greater the supply of water for fire purposes.

Taking the four inch pipe as the unit of measurement (and a four inch pipe is of no other service and should never be depended upon for fire purposes) we have the following relative discharging capacity of pipes for the same loss of head:—

A 6 inch pipe is equal to	3	fours.
A 8 inch pipe is equal to	6¼	fours.
A 10 inch pipe is equal to	12	fours.
A 12 inch pipe is equal to	20	fours.
A 14 inch pipe is equal to	30	fours.
A 16 inch pipe is equal to	43	fours.
A 24 inch pipe is equal to	130	fours.
A 36 inch pipe is equal to	390	fours.

Quantity of Water

DOMESTIC and Manufacturing Purposes. The amounts required depend upon the daily consumption per inhabitant and will vary with the nature of the population. The average is about 100 gallons per capita.

For Fire Purposes we have the following table:

Population	Rate of Fire Consumption in Percentage of Average, when Average equals 100 gallons per day.
1,000	1000 Per cent.
5,000	447 Per cent.
10,000	316 Per cent.
50,000	141 Per cent.
100,000	100 Per cent.
200,000	71 Per cent.
300,000	58 Per cent.
500,000	45 Per cent.

It is to be noted that in communities up to 50,000 the fire rate is the principal factor. We must make allowances for the maximum draft for Monday's washing and for the sprinkling of lawns in dry seasons, as well as the probable maximum fire draft which will most likely not occur at the same time as the maximum domestic draft.

It is therefore estimated that the maximum draft for all purposes will not exceed 336 gallons per inhabitant per day and from observations, Mr. Freeman estimates that the probable duration of such draft will not exceed six hours.

Pressure

THIS depends upon the elevation of the reservoir, the pressure of the pumps, the diameter of the pipe, the velocity of the flow and the amount of water being discharged.

A standard fire stream is one of 250 gallons per minute and requires a pressure of 45 pounds at the base of an 1⅛" nozzle.

Two hundred and fifty gallons of water per minute is a volume sufficient to make a black spot in any ordinary stick of timber that is likely to be found in the ordinary building; that is, it will reduce the temperature of the timber to below the ignition point.

Smaller streams of two hundred gallons per minute will meet dwelling house requirements and some of the minor mercantile structures. This is obtained when we have a pressure of 35 pounds at the base of an inch nozzle.

Our water systems must therefore be so constructed as to produce water in quantity and under sufficient pressure to give an efficient fire flow at a certain point for a certain period.

The estimated number of fire streams is given in the following table:—

Population of Community	Number of Fire Streams Required Simultaneously
1,000	3
4,000	6
5,000	6
10,000	9
20,000	12
40,000	18
50,000	20
60,000	22
100,000	28
150,000	34
180,000	38
200,000	40
250,000	44
300,000	48

Mr. Freeman estimates that it should be possible to concentrate two-thirds of the above number of streams on any one square in the compact value district of a community.

The number of standard fire streams per size of pipe, fed one end only, may be estimated by the following table; there are however variations according to the velocity of flow and the loss of head:

4 in. pipe	1	Standard Stream.
6 in. pipe	2	Standard Stream.
8 in. pipe	4	Standard Stream.
10 in. pipe	6	Standard Stream.
12 in. pipe	8	Standard Stream.
14 in. pipe	10	Standard Stream.
16 in. pipe	12	Standard Stream.
20 in. pipe	20	Standard Stream.
24 in. pipe.	25	Standard Stream.
30 in. pipe	30	Standard Stream.
40 in. pipe	40	Standard Stream.

Age and deterioration will reduce this flow approximately 2½% per year, depending upon the quality of the water, quality of the pipe, velocity of flow and the circulation.

The following table gives the approximate number of fire streams supplied by different arrangements of pipes for a loss of head of 10 pounds in the first 1000 feet:

Arrangement of Pipes	Approximate No. of Streams
Blocks 300 feet by 600 feet	
All 4-inch	6
4-inch lengthwise, 6-inch crosswise	10
All 6-inch	20
6-inch lengthwise, 8-inch crosswise	25
All 8-inch	40
6-inch lengthwise, 10-inch crosswise	40
6-inch lengthwise, 12-inch crosswise	50
Blocks 300 feet by 300 feet	
All 4-inch	9
4-inch and 6 inch	18
All 6-inch	25
6-inch and 8-inch	40
All 8-inch	60
6-inch and 10-inch	65

Gate Valves. The distribution system should be equipped with sufficient number and so located that in no instance should it be necessary to cut off more than 500 feet in a high value district or more than 800 feet in other sections of the city. There should be a plan of the water works system showing the location of mains, their size, location of valves and hydrants.

Hydrant Distribution. This depends upon the quantity of water required, the pressure and as to the use of steamers. Pressure less than 20 pounds is not considered efficient in any case. For direct hydrant streams, Mr. Freeman gives the following table:—

Length of Hose Feet	Pressure at Hydrant must be Pounds
100	63
200	77
300	92
400	106
500	120
700	149
1000	192

Effective Height of Streams

1⅛ Inch Smooth Nozzle Length of Hose (Feet)	Limit of Height with Moderate Wind as good Effective Fire Stream With 100 lb. at Hydrant (Feet)	With 80 lb. at Hydrant (Feet)	With 60 lb. at Hydrant (Feet)
100	88	82	67
200	82	72	59
300	74	65	52
400	67	58	44
500	62	52	40
700	53	43	33
1000	42	34	25

The horizontal reaching distance will be about 10% less than figures in the effective height table. For ordinary fire fighting, even when hydrants are closely spaced, hose length of 250 to 350 feet will be necessary.

The static pressure at hydrants should be between 80 and 100 pounds in communities up to medium size and 100 pounds in others.

The size of pipes should be such that with the requisite number of streams flowing, the pressure at the hydrant will not be reduced more than 10 pounds.

In cases of low pressure, we are dependent upon steamers as boosters.

Engines should be capable of furnishing their capacity at a pressure of 250 pounds. They are graded as follows:—

Maker's Size	Rated Capacity Gallons per Minute
Extxra First	1,000
First	900
Second	700
Third	600
Fourth	500
Fifth	400

Engines are used, not only to supply sufficient pressure, but also as auxiliaries to force streams from distant hydrants.

age conditions, the cost of maintain-

Mr. French states that under avering fire apparatus is about as follows:—

Yearly cost of maintaining a hose wagon about	$4,000
Yearly cost of maintaining a steam fire engine and hose wagon	8,000
Yearly cost of maintaining a steam fire engine without a hose wagon.	4,600
Yearly cost of maintaining a steam fire engine in active service beyond what it would cost to maintain it in reserve, about	3,400

The Gravity System is much more economical as hydrants and their maintenance is much less than the cost of steamers.

Hose Wagons should carry 1000 feet of 2½ inch Standard Cotton Rubber-lined hose and be equipped to lay in two lines at a fire. Each wagon should have an extra thousand feet of hose in reserve.

Engine Service Without Hydrants. Our table of pressures for direct hydrant streams gives the pressure we must have at the engine to be efficient. The problem before us now is the efficiency of the engine and the necessary supply of water. Both are more than apt to be lacking. Engines in the hands of the ordinary country department deteriorate rapidly and pre-arrangements for draft are not often made. Again, the Department is more than likely to lay in more lines of hose than the steamer can supply under the conditions. Each member likes to hold the nozzle. The service under this class of protection is very doubtful.

(See Table Above Picture)

If less than 80 lbs. should have steamers to furnish the required number of streams at required pressure.

Sprinkler Protection. The Standard Sprinkler Protection is based on the one, two, three schedule. This schedule is as follows:—

Pipe Inches	Heads
¾	1
1	2
1¼	3
1½	5
2	10
2½	20
3	36
3½	55
4	80
5	140
6	200

The number of sprinklers on a given size pipe refers to the number on a floor of a fire section or building, as all equipments are installed upon the supposition that only one floor will be on fire at once. A fire that will open a large number of heads upon more than one floor is usually beyond the control of sprinklers.

Feed Mains and Risers. The best and usually the most economical method of arranging feed pipes to sprinklers is to have the riser near the center of the group of sprinklers

(Continued on page 27)

Summary of Fire Streams

Population	Size of Feed Main	Streams	Hose Co's.	Hose	Gals. per Minute	Freeman 6-Hr. Estimate
1,000	6	3	2	4,000	750	270,000
5,000	10	6	3	6,000	1 500	540,000
10,000	12	9	5	10,000	2,250	810,000
20,000	16	12	6	12,000	3,000	1,080,000
50,000	20	20	10	20,000	5,000	1,800,000
100,000	30	28	14	28,000	7,000	2,520,000
150,000	36	34	17	34,000	8,500	3,060,000
200,000	40	40	20	40,000	10,000	3,600,000

Pressure not less than 80 lbs.

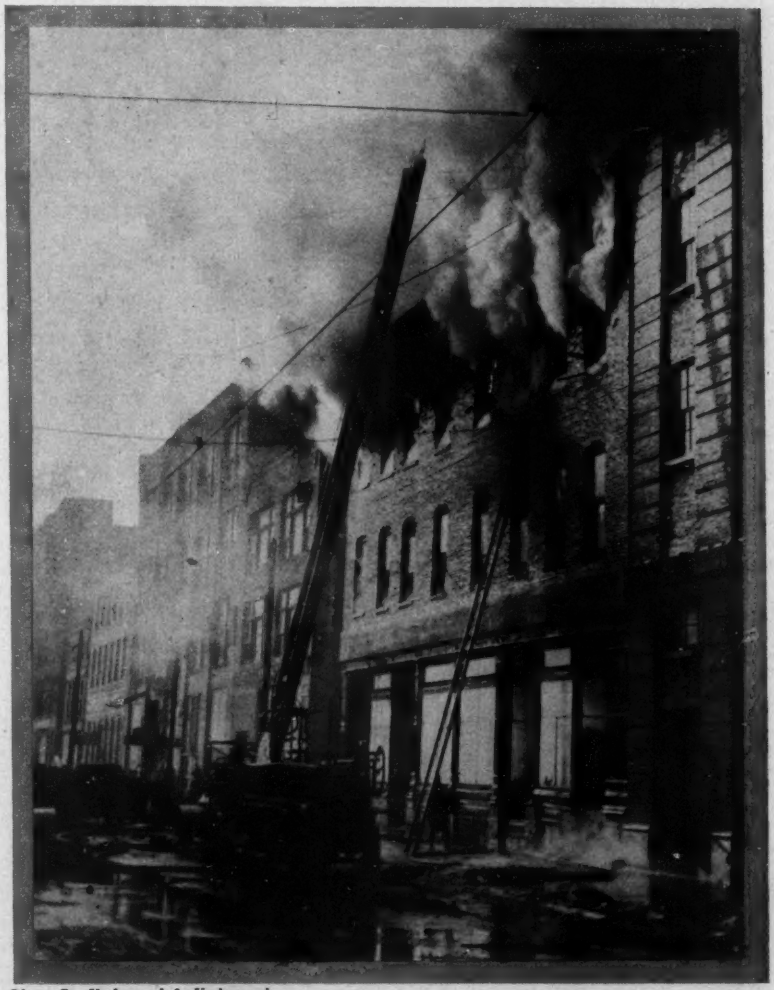
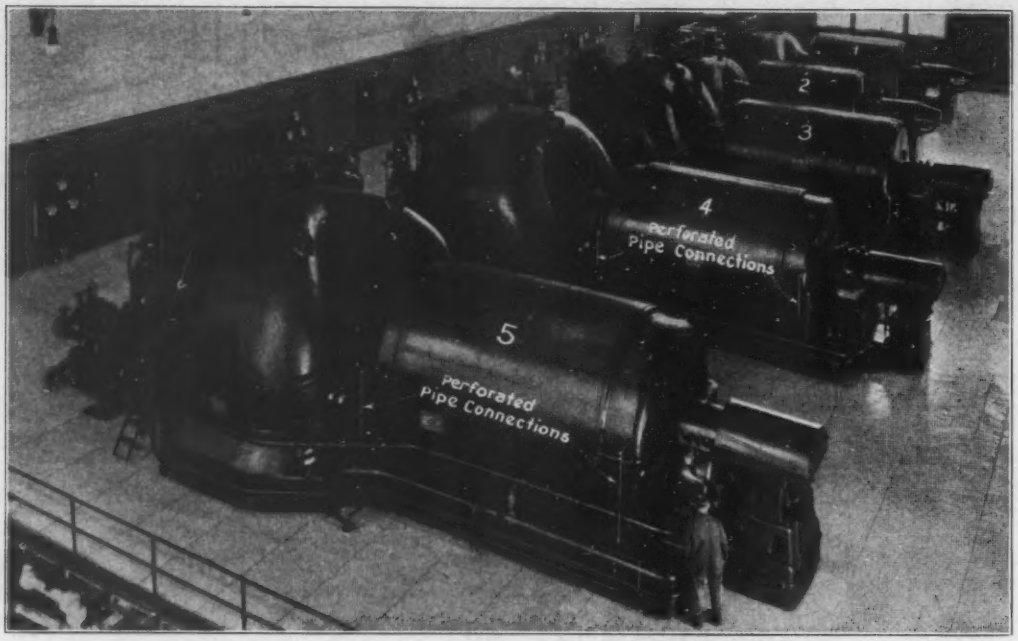


Photo By Underwood & Underwood

The Problem Here Seems To Be How to Save The Property At Either Side



Before the Fire—A short circuit in No. 4 turbogenerator started a fire in the end windings. Perforated pipes had not been connected to a water supply, but terminated in an open end as shown. The fire could therefore not be promptly extinguished and did large damage before the end casing could be removed and a hose stream used.

Safeguarding Light and Power

Fire In Large Turbogenerator Shows Need of Protection Against A Hazard Which Is Growing Greater As Industry Expands

THE power station is the heart of an industry or a community. So vital is the service it gives that any complete interruption would cause wide-spread loss and inconvenience. Reliable equipment, careful operation, good maintenance, and reserve units generally assure continued service.

Fire is one danger to be guarded against. Even a small fire in the equipment may be of serious consequence, so that all reasonable safeguards are necessary.

Large generators are particularly susceptible to damage by fire which follows arcing. Such a fire if not promptly extinguished will seriously cripple the machine, requiring slow and expensive repairs, and meanwhile causing heavy consequential loss unless there are additional units to supply the power demand.

Fortunately, turbogenerator fires are rare. The story of a recent outstanding one is told in the following pages.

Fire in a Turbogenerator

AT THE Millers Ford Station of the Dayton Power and Light Company in Dayton, Ohio, there are

Reprinted from

The Factory Mutual Record

Published By The Factory Mutual Fire Insurance Companies of Boston, Mass.

five turbogenerators, three of 25,000 kva. capacity and two of 15,630 kva. capacity. Just before seven o'clock on the morning of April 10, a short circuit occurred in No. 4, one of the larger machines. It had been on the line since seven o'clock the previous morning, and through the night had carried the entire load, which varied between 8500 kw. and 15,000 kw. In anticipation of the usual morning demand, the other two larger generators had been thrown in, one at 5:18 A.M. and the other just a few minutes before the short circuit occurred. No disturbance was noted when either of these machines was connected to the busses.

The three large generators were cooled by ventilating air drawn from outdoors and again discharged outdoors. They were equipped with differential relays arranged to trip the main oil switch and the field switch in case of internal short circuit or ground. Nos. 4 and 5 were also equipped with 1¼-inch perforated copper pipes around the inside of each end over the windings, but the pipes had not been connected to a water supply for fear of possible water damage to the windings.

When the short circuit occurred, the differential relays opened the field switch and disconnected the machine from the busses. The operator immediately shut off the steam for the turbine, but the machine continued to run by momentum and did not finally come to rest until a half-hour later. Meanwhile, smoke issuing from the casing showed fire to be in the end farthest from the turbine. The station men took off the covers on the portholes in the upper part of the casing, and discharged twenty-eight one-gallon carbon tetrachloride extinguishers into the machine. The liquid could not reach the fire in the lower part. The rotation fanned the fire and created air currents which carried the gases out through the ventilating ducts, thus preventing a blanketing and extinguishing action. Smoke driven out through the opened portholes filled the station and made fire fighting difficult.

The chief engineer, called on the telephone, then instructed that the upper part of the end casing be removed and that water be used. This had not been done previously for fear of water damage to the coils. After some delay in removing the bolts, attaching the crane, and lifting away the heavy casing, the men used a large hose stream from a connection in the boiler house. This put out the fire in a few minutes, about a half-hour after it first broke out.

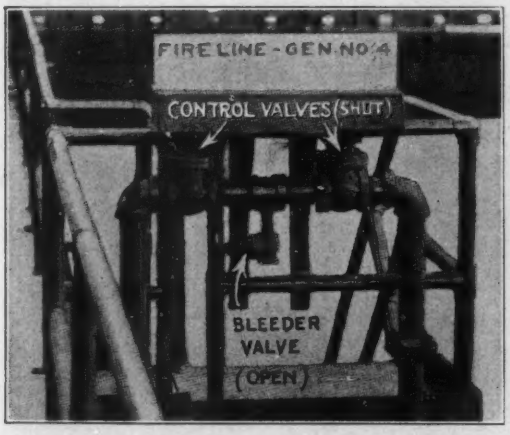
EXAMINATION later showed that the short circuit had occurred in the lower part of the machine, due probably to a breakdown of insulation between one of the stator-coil collector rings and a grounded support. The insulation on the end of the stator coils ignited, and the fire fanned by the rotor quickly swept around the end of the machine. Because it could not be promptly extinguished, not only were the stator coils destroyed, but the rotor was damaged so as to need rewinding, the steel frame of the machine and the coil supporting ring were cracked, and about twenty inches of the laminated stator coil needed japanning. These repairs required about ten weeks. An estimate of the loss was between $40,000 and $50,000.

The damage to the stator coils could be expected under the conditions, but the damage to rotor and steel-work could have been largely prevented and the total loss kept down to one-half of what it was, if the pipes had been connected so that water could have been turned on as soon as actual fire was apparent. A fire in a machine taking air from outside and discharging it outside is best extinguished by water, since carbon dioxide or the vapors of carbon tetrachloride would be carried away and could not blanket the fire. The sooner water is used the smaller the damage. Fire would probably damage the stator sufficiently to need rewinding whether water were used or not. Water, therefore, does not cause added damage to the stator, while it definitely does extinguish the fire before the rotor or steel-work is damaged. It was the delay in using water in this case which gave the fire time to develop enough heat to damage the rotor and the laminations and to crack the steel frame and coil-supporting ring.

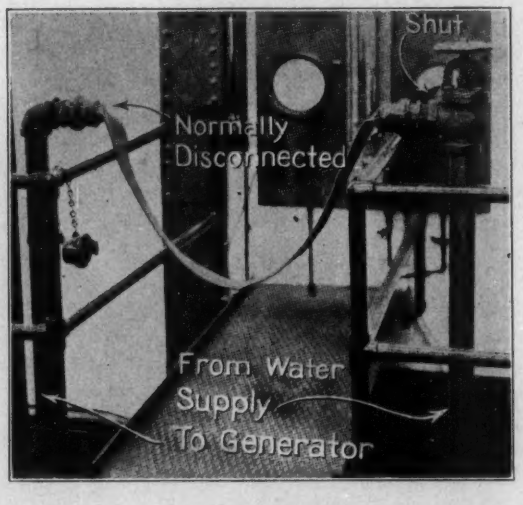
Generator Protection

PERFORATED pipes connected to an ample and clean water supply are a necessary protection over the end windings of large hydro- or turbogenerators. To prevent accidental water damage, the supply should be controlled by two valves, normally kept shut, with an open bleeder valve between them. The valves should be conveniently located in a cabinet with a glass front, which must be broken out before the valves can be operated. Another but less desirable method is by means of hose reaching across a gap in the piping, one end of the hose to be normally disconnected and provided with either an ordinary or quick-snap coupling. Operators should be instructed not to turn water into the generators until they are sure

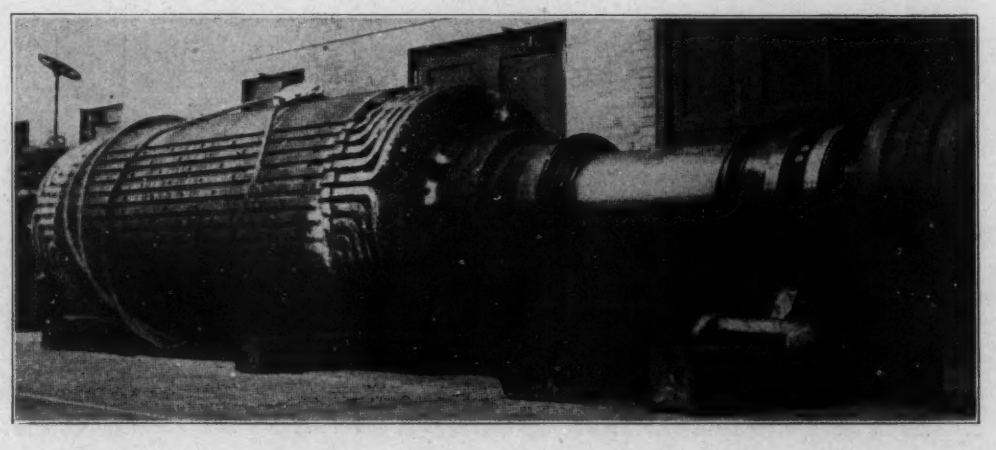
(Continued on page 29)



The Preferred Method—The water supply to perforated pipes is best controlled by two shut valves with open bleeder between, to prevent leakage and consequent damage to windings. Valve wheels are enclosed in housing opened by breaking glass door on other side.



The Alternative Method—The hose has one end normally disconnected and is wrapped around the valve. By attaching the quick-snap coupling and opening the valve, water can be turned into the perforated pipes. Regular examination of hose for deterioration is necessary.



Repairs To The Rotor —The damage (right) occured at the near end of the large section. The coils set in the long slots had to be removed and entirely rewound.

Co-Insurance

(Continued from page 6)

THE insurance company could accomplish the same purpose by requiring the purchaser of insurance up to only a small percentage of the value of the property to pay a higher rate per unit of coverage than though the insured wished to purchase a larger amount. There is nothing unjust in this arrangement as the matter of prices and commodities are viewed in the business world. The person who buys a small amount of paint, let us say, pays a larger price per unit of paint than the one who desires a larger quantity of this commodity. The same is true of a very large proportion of commodities purchased day by day in the ordinary course of business, and no thinking person believes that any serious injustice results from this practice. Rather than have a sliding scale of costs for insurance, according to whether a small or a large amount of coverage is desired, the companies have hit upon the plan of attaching the coinsurance clause. It accomplishes, in effect, very much the same purpose as would be accomplished by charging a retail price for a small proportion of coverage and a wholesale price for a large proportion of coverage. Under the coinsurance clause, the same rate per unit of coverage is charged to all applicants, but those who purchase less than the percentage of coverage specified in the coinsurance clause are required, as stated above, to be a coinsurer for a certain agreed percentage of the total coverage.

The subject of coinsurance in fire insurance is intimately connected with the making of fire insurance rates. The amount collected by fire insurance companies from the people whom it insures must be sufficient to cover overhead charges for doing the business and to maintain a fund large enough to pay such fire losses as occur. If some people insure their property for close to one hundred per cent of its value, while others cover their property only for sums varying from twenty-five to eighty per cent of the fair cash value, it is clear that persons who own properties of like value will be contributing greatly varying sums toward this common fund from which fire losses must be paid. Suppose A and B have properties which are exact duplicates of each other, each being valued at $200,000. If A pays for $160,000 coverage and B for only $80,000 coverage, should each get the same indemnity on a $40,000 loss? If one believes in coinsurance, the answer clearly is "No." It seems to be an equitable arrangement for all parties concerned for the insurance companies to insist upon the insured carrying a fairly large percentage of coverage when fire insurance is contemplated so that each of the insured will contribute his fair amount to the insurance fund.

VARIOUS writers on insurance have viewed the subject of rate making in fire insurance as analogous to the subject of taxation. A city's taxes are based upon two important factors—the rate per cent and the assessed value of the property. Assuming the rate to be a constant factor based upon the supposition that the insured value of the property would equal about eighty per cent of its actual value, and that it is possible for each property owner within the limits of any particular city to put down whatever figure he so desires for his assessment, a very peculiar situation would doubtless soon arise. Some would put down their assessment as one-tenth of the value of the property; others at one-twentieth of the value; others at one-fourth of the value; others at half the value, some at three-fourths or even eighty per cent of the value, and so on. Any sensible person will readily admit that this would mean gross discrimi-

(Continued on page 29)

Photo By P. & A.

But the Zero Weather Scarcely Lets Up When the Time of Flood Waters Arrives With Its Costly Ravages of Life and Property.

State Insurance in the United States

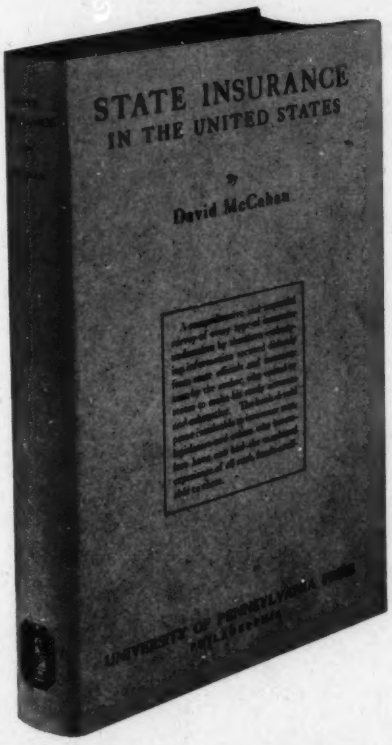
Review of a New Book by David McCahan

SUPPORT of measures to place the state in the business of writing insurance of various kinds continues to be more or less active. Much of this support has come from persons who would vigorously object to the state entering their own particular field of business activity. They fail to recognize that conditions which hamper a governmental body conducting one form of business may likewise handicap it in rendering an insurance service. It is not surprising therefore that nearly one hundred state insurance funds have come into being within the past few decades.

Several years ago, Dr. David McCahan, Assistant Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania, and formerly Assistant Manager of the Insurance Department, United States Chamber of Commerce, began a systematic and careful survey of all forms of state insurance operations. He spent months touring the country by automobile, in the course of which he traveled nearly 20,000 miles and visited 37 states, interviewing state officials, insurance men, and others interested in the problem.

DR. McCAHAN'S research shows there are now ten principal types of state insurance funds in the country: Workmen's Compensation Insurance, Teachers' Pension, State Employees' Pension, Hail Insurance, Bank Guaranty, Public Deposits Guaranty, Public Property Insurance, Life Insurance, Torrens Title Insurance, and Public Official Bonding Funds, some of which are of substantial size, though many are small. An analysis of these funds from such angles as the method of administration, types of coverage written, rating methods, adequacy and equity of rates, expense ratios, loss prevention activities, claim service, state aid, financial stability, state guarantee of solvency, and political influences are thoroughly and accurately covered in a book entitled STATE INSURANCE IN THE UNITED STATES, just published by the University of Pennsylvania Press at Philadelphia. In this has been brought together for the first time the combined experiences of all states in the hope that it may prove of value to insurance men, legislators, state officials, and others who are seriously concerned as to the proper relation which the state should hold to the institution of insurance.

In concluding this book, the author states: "If it be correct to assert that the functions of government should be confined to the rendering of those services for the public welfare which cannot be performed equally well under private initiative, then state insurance funds which essay to write coverage that would otherwise have been secured from private sources, must demonstrate that they can furnish a better and more satisfactory form of service than that elsewhere available. And the best proof that they are doing so lies in a comparison of their achievements with those of private rivals who are operating on the same plane. If superiority cannot be conclusively proven under such circumstances, there is little reason to believe any better results would be secured by a monopoly. No satisfactory proof of superiority has yet been advanced, so all that fund proponents can logically expect is that competitive funds be permitted to operate alongside of private carriers, thus giving to each an opportunity to demonstrate its excellence.



"THE necessity for and desirability of monopolies in the field of insurance have never been demonstrated, and no facts developed by this investigation would at all warrant the establishment of monopolistic state funds for any purpose other than self-insurance. They have been fairly tried, and through experience have been found to be less flexible in their response to changing economic conditions, less scientific in their methods, and less progressive in their ideals and services than are private carriers. Competition, sanely regulated, has been the lifeblood of insurance development in the past. It is the surest pledge of advancement for the future."

Dr. McCahan's volume is done in very readable fashion and the various tables and other purely technical information included are explained with such clarity that the insurance layman can readily understand them.

An exhaustive index, both by states and subjects, is included, making the book most convenient for ready reference. Without doubt the book merits a place in the library of any man whose business calls for information on insurance matters.

New Insurance Commissioners

On April 1st, Mr. Shelton M. Saufley, Commissioner of Insurance of the State of Kentucky since 1924 will retire and be succeeded by Mr. Bush Allin of Harrodsburg. Mr. Allin is a banker and local insurance agent in his home city.

Mr. Frank H. Smith became Commissioner of Banking and Insurance for the State of New Jersey on February 28th, returning to the post which he occupied some eight years ago.

Mr. Harrison Rider, President of the Board of County Commissioners of Baltimore County, has been appointed Commissioner of Insurance for the State of Maryland by Governor Ritchie.

Mr. Joseph B. Thompson of Kansas City, Missouri has been appointed Superintendent of Insurance for that state to succeed Benjamin C. Hyde.

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A New Pilot Takes the Helm

SINCE we last talked to our readers in this column a new pilot has taken the helm on America's ship of state. With fitting pomp and pageantry the United States has inaugurated a President, and with measured words of manifest sincerity he has declared to the people the principles and ideals by which he will be guided in undertaking his great responsibilities.

This is not a political journal, and there shall be no politics in this editorial—at least none of the sort which can be labelled as peculiar to any party. Whatever label Herbert Hoover wore before he was elected to the highest office in the gift of the American people, he is now, without respect to labels, the President of all the people. As he declared in his address of March 4, "The government is that of the whole people. . . . The animosities of elections should have no place in our government, for government must concern itself alone with the common weal."

Hence we are interested in the inauguration as an event typical of the life of America. It would be so whoever happened to be the central figure, or whatever the ticket upon which he was chosen. It marks no crowning of a monarch, but the choosing of a fellow citizen to administer and lead. It is democracy displaying its capacity to govern itself in an act of supreme importance; it is democracy interpreting its hopes and aspirations in the character of the man upon whom its choice may fall. And it is one of the striking facts of history—so far as history reaches in the annals of this republic—that with very few exceptions democracy has made few blunders in its choice, and none that could be called disastrous.

We are interested in President Hoover as a man because he marks a departure from precedent in the choice of chief executives—unless indeed the fact that George Washington was once a surveyor is precedent for the election now of an engineer to occupy the office which he made forever glorious.

It has been said, and with no little truth, that President Hoover is not a politician. That is another good reason why there is no necessity to intrude politics in this editorial. He is not in any of the accustomed senses of the word a politician. He is a man trained in the application of science to specific problems. That is one phase of his personality which strongly engages our interest.

Our age is often called an age of science. There is no business or profession which can ignore science today. The business of insurance—if we may revert to shop-talk for a moment—has become increasingly a matter of scientific research and the use of scientific principles. In every sphere, from the upbringing of infants to the management of great public utilities, the scientific approach is now the only approach which can justify itself.

What if government, which has been the game of politicians too much in America, should now become the problem of the scientist. It has been that in colleges and universities; but the man in office has been inclined to look upon the political scientist as a sort of academic theorist, too utterly impractical to be of any value. There is no other realm in which science has been considered impractical in these modern days. Suppose we should be shown by this engineer President that it is intensely practical when applied to the actual task of governing a great nation? That demonstration, surely, would be worth while.

Our acquaintance with engineers has tended to heighten our respect for them and for their tremendously useful profession. One thing we have noted about them—a maladjustment, an inefficiently functioning mechanism, an obstruction to progress, any one or all of them constitutes a challenge to action. A problem is a thing to be solved. It stirs their blood, it quickens their minds, it sets them tingling to be at it. We rather think we will find that to hold true in the case of President Hoover. He is not the sort of man who is likely to sit still and wait for things to improve. His engineering training and experience will prompt him to do something about it; and when he acts it will be with a plan, with blue-prints based upon a survey of the situation, a knowledge of its needs and an understanding of the materials which may be employed to meet them.

THERE is just one passage in the inaugural address to which we wish to refer. It has a peculiar aptness in relation to interests that closely concern us.

President Hoover, in discussing the economic situation, declared:—

"Our people in recent years have developed a new found capacity for cooperation among themselves to effect higher purposes in public welfare. . . . Progress is born of cooperation in the community. . . . The government should assist and encourage these movements of collective self-help. . . . Business has by cooperation made great progress in the advancement of service, in stability, in regularity of employment and in the correction of its abuses."

In this stress which he puts upon the principle of cooperation he is merely underscoring the basic ideal of American life, exemplified in its government and the secret of its strength. Long ago mutual insurance discovered the value of that principle, and put it to work for the purpose of providing security to the individual thru the combined resources of the many. Time and again we have declared in these columns that in its genius and character mutual insurance is peculiarly American insurance, and the name of this Journal proclaims that fact. None-the-less is it gratifying to find the new President of the United States congratulating the country that to increasing degree this principle embodied in our government is becoming recognized as a factor in the progress and success of American business.

Life-Lights Against a Business Background

The Seed Catalog

By S. J. DUNCAN-CLARK

I WENT home the other night in the sort of humor which no man has any business taking home with him.

True, it had been an unsuually exasperating day. From the hour of my reaching the office to discover that a confidently expected letter of much importance had failed to arrive, to the final desperate moment when a wild dash up the station stairway brought me only a vision of the 5:47 vanishing from the train shed, it had been a day when everything seemed to go wrong, to turn its rough side uppermost, to offer a hot handle to my sensitive fingers.

If any of the intolerable bores who waste the time of usefully occupied human beings failed to drop in on me during those eight hours of attempted labor they must have been on vacation or sick in bed.

My usually sweet disposition was utterly ruined. The world had assumed for me a dreary and discouraging aspect.

Naturally my wife sensed my mood soon after I had crossed the threshhold of my domicile. A tactful woman, she said little, but hastened to get the evening meal upon the table. Her efforts to engage me in conversation during the course of the meal, however, were unavailing. My answers to her gently stimulating remarks were in the tradition of a recent President of the United States —monoverbal when not monosyllabic. But she affected not to notice this display of taciturnity, and maintained her own cheerful attitude toward life with a persistence that gradually made me ashamed of myself, altho it failed to evoke response in kind.

DINNER finished I betook myself to an easy chair, still nursing my injured feelings. My wife cleared the table and set silver and china in readiness for the dishwashing machine. Then she joined me in the living-room and ensconced herself on a couch with what appeared to be a magazine.

The newspaper was lying on my knee. A seven column headline shrieked at me "Discouraged Business Man Takes Own Life." It rather chimed with my mood, but I did not want to read about it—or anything else. So I brooded, casting an eye occasionally at my wife, who seemed so happily contented.

"Easy for a woman," thought I. "None of a man's worries and vexations over business. Routine of housework, interspersed with a reasonable amount of club life and social activities. She wouldn't look so cheerful if she had to bump up against the sort of world I know."

I SUPPOSE my gaze had been resting rather fixedly on her while I meditated in this manner. That is probably why she looked up from the page by which her interest had been absorbed, and caught my eye. She smiled. I had to say something.

"What are you reading?" I asked, trying to make my question sound pleasantly casual. I think she had been waiting for that opening.

"The seed catalog," said she. "And, do you know dear, I have been amusing myself by wondering how many seeds and bulbs and shrubs the dealer would sell if he did not put these beautiful and tempting colored covers on his catalog, and strew the pages with such wonderful pictures of amazing flowers. Just look at those gladiolas. Aren't they simply gorgeous? They simply make me tingle all over with eagerness to get out in the yard again and make a garden."

"Humph!" said I. The remark was neither intelligent nor polite, but I still felt that way.

"Suppose," she continued, choosing to ignore my lack of adequate response to her enthusiasm, "Suppose instead of putting these gay and glorious blossoms on the cover, and scattering a prodigality of floral magnificence thru the pages, the seedman had pictured the weeds, the burdock, the lamb's quarter and plantain with which every gardener knows he must wage war; suppose he had strewn the catalog with portraits of cutworms and grubs and caterpillars and cabbage moths, and every other pest which attacks the growing things, how many customers would he be likely to win or to retain?"

"If he were honest he would," I grouched.

"Oh no, I disagree with you. Back here at the end of the catalog there are notes on the garden enemies, and suggestions of what to do about them. He tells of sprays and other things which will destroy the pests, and of tools by which the weeds can be disciplined and eradicated. But he puts the best side forward, because that means business for him and encouragement for the customer. After all, you know, the aim of the seed catalog is to produce beautiful gardens. It can never make a picture garden as lovely as the real thing by any sort of exaggeration,—and the real thing is possible in spite of the weeds and the bugs,—but it can stimulate people like myself to try to make beautiful gardens by its pictures."

I WAS becoming suspicious.

"Henrietta," I exclaimed, "are you preaching at me?"

"Why, you silly dear, whatever put that into your head?" she asked.

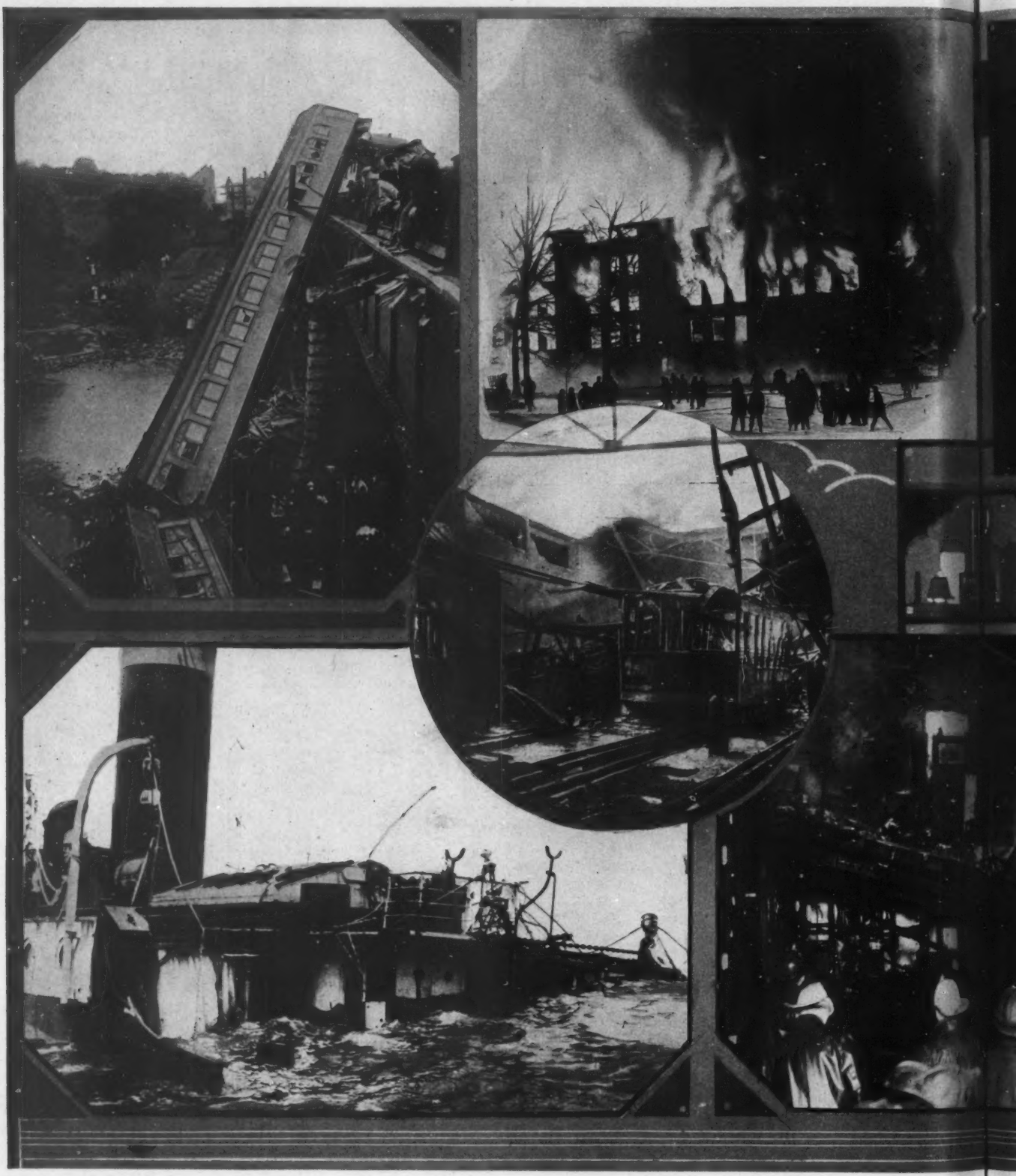
"Well," I answered, and I had to smile now, for there's no denying Henrietta is clever, and I rather pride myself on having discovered that fact. "Well, you see I found a lot of burdock and cutworms in my business garden today, and I guess I have been presenting them on the front page in the fashion you think would be so bad for the seedman's trade. Come to think of it I wouldn't wonder if I lost an order today for that very reason."

"That's too bad, dear," she said, "but worse than losing an order is hiding your own amiable self behind the weeds and the grubs. You know you are so interesting and lovely and—"

I am not unduly modest, but if she was going to catalog my buried virtues in the fashion adopted by the seedman for his extravagant literature it had to be stopped. And here was only one way of stopping it. I took it.

"Now you are yourself again," she exclaimed catching a temporarily suspended breath.

Henrietta is clever—and she is right, too. The weeds are not to be ignored, but their place is not on the cover.



Wrecks Seldom Pose for Photographers, *But the One Shown Here (Upper Left) Hung on the Bridge's Edge Waiting to be Filmed. Railroads Are Safer than This Picture Indicates, But the Safest Thing Is to Have One's Self and Property Insured.*

Like a Great Blast Furnace, Spouting Flames, *This Building (Upper Left Center) Is Seen Headed for Certain Destruction.*

All That Was Left of a Railroad Car Vestibule *(Upper Right Center) After a Terrific Collision in the Night. Note the Roof is Split Lengthwise.*

INSURANCE IS A UN

Photos in Top Row by Brown Bro—Both

All that Was Left of Street Car Barns *(Circle) After a Fire Had Roared Its Way Through the Structure and Licked Up Much Rolling Stock Badly in Need of Repair.*

UNIVERSAL NEED

—Bottom Row by P & A

Losing a Courageous Battle with the Sea, *This Italian Steamer (Lower Left) Sank on the Dutch Coast, Carrying Down Its Entire Crew. Much Valuable Cargo Was Also Swallowed by the Waves.*

Zero Weather Hampers the Efforts of Even the Best Equipped Firemen. *The Coating of Ice on the Burning Building (Upper Right) Made the Footing Insecure, the Flames Hard to Get At, and Doubtless When the Adjuster Arrived He Found His Task Doubly Complicated.*

Firemen Escaped Just as This Building Collapsed. *(Center at Bottom) This Blaze Was in a Lumberyard and the Imperiled Men Were On the Roof When It Started to Sag.*

Two Automobiles and a Fire Hydrant. *(Lower Right) Both Cars Skidded Into the Water Plug After They Had Collided Some Distance Away. Miraculously the Drivers Both Escaped Without Injury.*

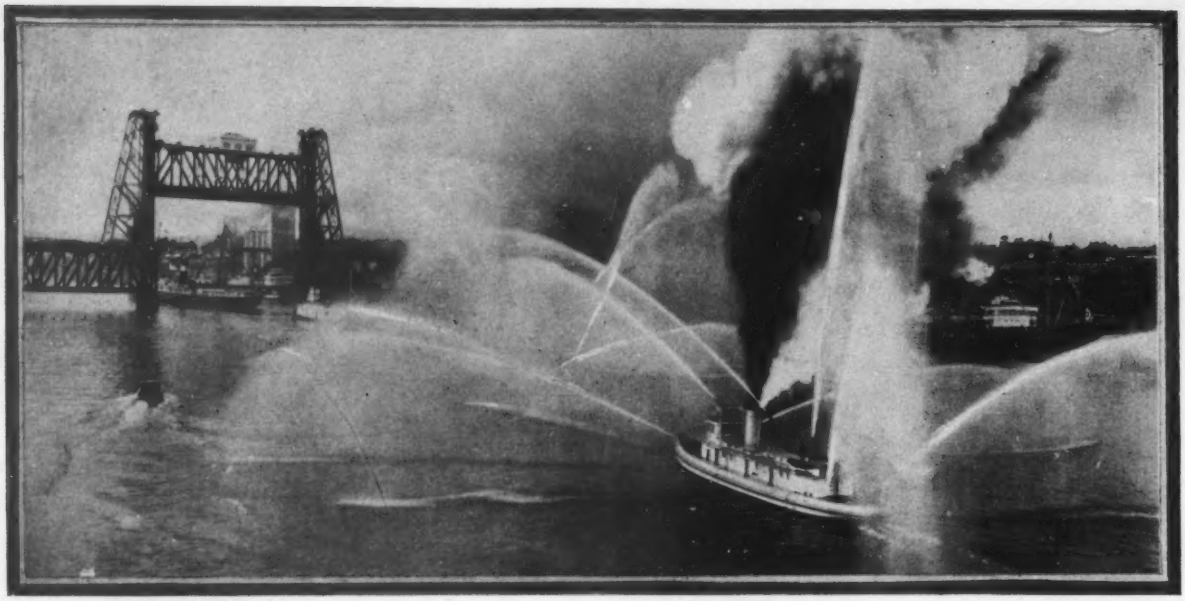


Photo By Underwood and Underwood.

New Fire Boat Demonstrating It's Effectiveness in the Harbor of Portland, Oregon.

Boats for Fire Fighting

Municipal Systems for Combatting Flames Along Water Fronts Greatly Improved By Developments of Recent Years

"FULL steam ahead! Bear down to the windward! Prepare your broadside and let 'er go!" The commands from the bridge came rapidly and excitedly. The destroyer, after many years of idleness and neglect, was again steaming into the fray. Its steel hull and canvassed deck must have thrilled as of old. What if the enemy was no longer the formidable destroyers and submarines of Imperial Germany; what if its eight inch bow and stern guns were replaced by the nozzles of high pressure hose? The revamped ship was prepared to put up as strenuous a fight against the onslaught of smoke and flame as against the enemy's squadron.

Many waterfront cities have taken advantage of the low cost of ex-battleships, of one sort or another, to create a municipal fire boat system and to attempt to protect their waterfront and the ships which come to anchor in their harbor against the ever-present fire hazard. Perhaps, their fire-boats were a mere afterthought, perhaps were it not for the ridiculously low cost of abandoned government vessels, these cities would not have turned their fire departments loose on a boat, but once having

By J. PAUL ATWOOD

learned the effectiveness of the fire fleet and having computed the value of property saved by the boats, these cities will unquestionably further develop their marine fire fighting force.

THE most highly organized force of marine firemen in the country patrol the waters and water fronts of New York harbor. There are ten boats assigned to the task and their crews lead no sedentary lives. The fleet responds to 2525 calls a year or almost one a day for each boat, assuming that only one boat is necessary at each blaze. There are 578 miles of shore front, enough to give each boat 57 miles as its exclusive territory, and practically every inch of it is covered with wharves storing highly inflammable matter. Add to this the hundreds of boats which lay at their moorings in the harbor and which are generally under the wing and protection of the marine firemen of New York City and then you will have a fair idea of the task which confronts the fire boats and their crews.

The fire hazard on ship-board is, peculiarly, greater when the ship is lying peacefully at her mooring than when she is steaming ahead upon the high seas. Many of the crew are on shore, discipline is apt to be relaxed and the small blaze is neither readily discovered nor efficiently fought. It is up to the fire boats to catch these flames in time and to extinguish them quickly, or, failing that, to surround the fire and prevent their spread either to other ships or to the shore.

This business of surrounding the flame is frequently one of the most strenuous tasks with which the marine fireman is faced. To them "casting oil upon the waters" has a meaning quite different from its ordinary one. Every member of the department remembers the "Sorrentes," a Spanish tramp that steamed into New York harbor, cast anchor and promptly caught fire, pouring burning oil upon the waters. The tide in New York harbor moves at the rate of six miles an hour and with it the burning oil would have been carried to hundreds of wharfs and ships. To extinguish the flame immediately was impossible; the crews of the fire boats had to content themselves with merely keeping the flame in the middle of the harbor. They surrounded it with a bulwark of water and coun-

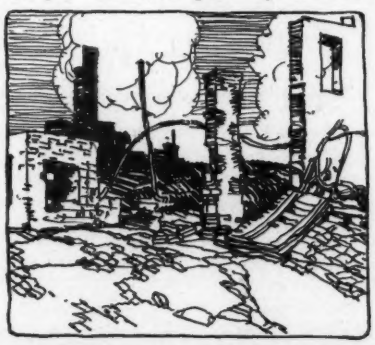
teracted the movement of the tide with the streams of their high pressure hose. The manoeuver was successful; the shore line was saved, but the fire continued and for fifty days the crews of the fire boats were compelled to stick to their task for twenty-four hours a day and await the moment when the flame would have consumed itself. It was an exhausted squadron that at the end of the fiftieth day reported the flame extinguished and the work finished.

Since the "Sorrentes" affair, the fire boats have had considerable experience with burning oil, but none of it has burned for as long a period as fifty days. The technique in each instance, however, is identical; "keep the fire in the middle of the harbor where it can do no damage and let it burn itself out." Barrelled oil which catches fire is not quite as difficult to handle as bulk oil; it does not spread as readily, for some barrels do not discharge their contents immediately, and at most times there is less oil afloat.

MOST of the problems with which the crews of the fireboats have to contend are radically different from those which the land firemen face. On shore when a fire is out, it is out; when and if it has destroyed everything in its wake it is over. But when a burning ship sinks, and goes to the bottom of the harbor, the marine firemen know only that *temporarily* they are through with that job. If the ship is raised, they may again have the same fire to deal with. Only recently a barge of salt was brought up from the floor of the harbor; when it sank, it was burning and when it again reached the surface it immediately re-ignited. All sorts of queer things occur in the life of the fire boat crews.

Even their life follows a peculiar routine. They are essentially seamen, yet they live on shore. On the New York City fleet, there are no bunking facilities except for the pilot and engineer (every possible inch is utilized for fire fighting purposes) and thus the men sleep and eat ashore ready at any moment to jump into their clothes and get on their boat. Steam is kept up at all times and the boats are ever ready for instant service. These marine firemen need special training; they have to become full fledged seamen and know how to handle a ship and conduct themselves when on a voyage; they must know all of the peculiarities of ship fires and how best to attack the flame that breaks out on a wharf, and they must be able to handle efficiently the fire apparatus of the boat.

In a great seaport, such as New York, the marine firement are, on occasion, somewhat more than firemen. They share the duties of the harbor police and the coast guard. In the course of a year they rescue hundreds of persons from drowning in New York harbor. More than one small boat in distress has been towed safely back into port by the fire boats. Small sailing vessels, out of the control of their skipper, being carried by wind and tide far out to sea have been rescued by the speedy and powerful fire boats. Fires far out of the jurisdiction of the marine fire department have been checked and extinguished by the fire boats. Recently a blaze on the Williamsburg Bridge, 136 feet above the East River was put out by a hose of the fire boat, "John Purroy Mitchel" on the river below playing a vertical stream from a two and a quarter inch nozzle on the blaze above. Flames as far as a half mile inshore have been extinguished by the high pressure hose of the fire boats.



This "John Purroy Mitchel," the flagship of the New York fleet, is a remarkable boat. She cost the city about $230,000, burns oil and can pump 9,000 gallons of water a minute. Her hull is of steel and on her aft deck there is a circular steel turret or "fighting top" that gives her something of the appearance of a battle ship. She can send a stream of water straight up in the air for 175 feet.

New York City needs just such powerful boats to protect its waterfront and the ships which use her harbor as a port of entry. In this busy port with its hundreds of miles of water front and hundreds of vessels, there is always the possibility of a serious conflagration. How many mighty holocausts have been prevented by the prompt action of the fire boats, no one will ever know, but past calamities, unavoidable and uncontrollable have indicated the extent of the damage and destruction which a serious marine fire can leave in its wake.

(Continued on page 20)

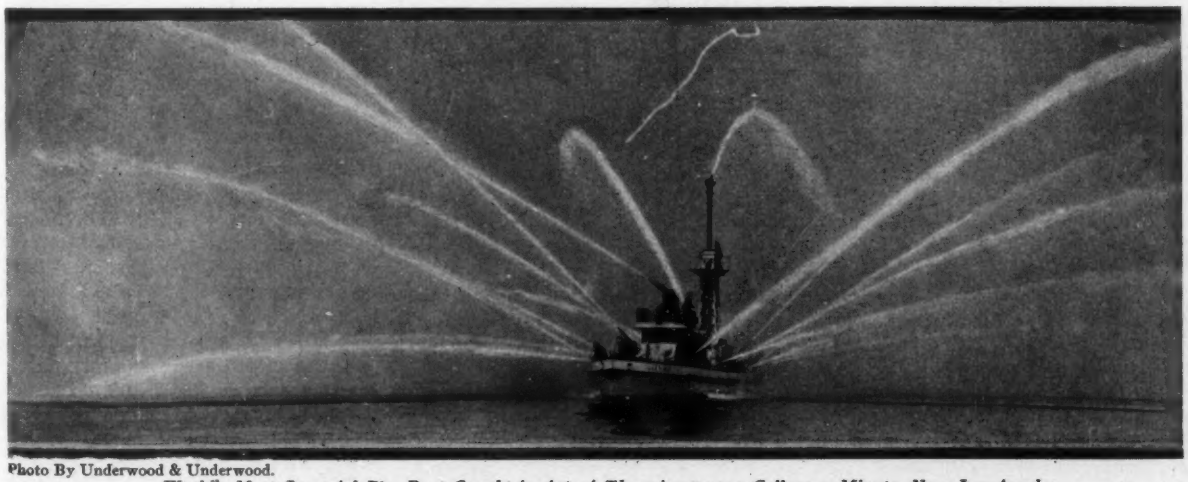


Photo By Underwood & Underwood.

World's Most Powerful Fire Boat Caught in Act of Throwing 12,000 Gallons a Minute, Near Los Angeles.

Boats for Fire Fighting

(Continued from page 19)

NEW YORK harbor itself has seen the worst maritime blaze in all the annals of history. On Saturday, June 30th, 1900, four new North German Lloyd and Hamburg American liners were moored at their docks on the Jersey side of the Hudson. It was their first appearance in America and at the time they were marvels of steamboat construction. Thousands of people wanted to see them and a particular Saturday afternoon had been set aside by the companies for the inspection of the vessels.

On the deck of one of the boats, there was some unprotected turpentine, oil and cotton. Someone dropped a lighted cigar or cigarette stub nearby and the inevitable followed. The blazes took everything in their path. The ships were moored so closely together, that the fire soon spread to all of them and only one, "The Kaiser William" was able to cut its cables and put out into the harbor. Sightseers on the remaining boats made a mad dash for the gangplanks, but the flames cut off that sole avenue of escape. Hundreds hurled themselves into the water in a desperate effort to save themselves. Eventually, the hawsers which had held the ships fast to their pier burned through and cut loose the flaming vessels, and the tide carried them down the harbor past the Battery, laden with their doomed and stricken human freightage. On their outward course, their intense heat kindled many blazes both on shore and on vessels which had come to the rescue.

Although the fire originated on the Jersey side of the Hudson, technically out of the jurisdiction of the New York City fireboats, they proved invaluable in rescuing persons who had thrown themselves into the water and in combatting the auxiliary blazes. Were it not for the fire boats, whole sections of Hoboken and New York City would probably have been destroyed by fire. In this work, the fire boats were eminently successful; their other task was too great and although valiant efforts were made to check the flames of the blazing ocean liners, nothing could be done to extinguish the fire nor to save any large proportion of the entrapped mass of humanity. Six million dollars worth of damage and nine hundred lives lost were the dreadful results of the carelessly thrown cigarette or cigar butt.

In another dreadful disaster, the New York City fireboats proved their worth and the crews amply demonstrated their unflinching courage. The "Black Tom" explosion is today just one of the dark memories of the war period. Military explosives stored on the Jersey side of the Harbor suddenly went off and killed, maimed and destroyed as effectively as enemy shots. The resulting fire added to the damage.

The units of the New York fire boat squadron responded to the first call and while on the way to the scene of the disaster, but yet many miles from it, successive explosions shattered the heavy glass in their port holes. Again the fireboats were helpless against the main blaze; not only was it some distance inland, but it was the sort of conflagration which is beyond control and which can be checked only by destroying everything in its path. But there were twelve barges loaded to the gunwales with explosives which had been jerked from their mooring by the force of the explosion and which were floating free in the harbor, a menace both to shipping and to the shore line. To them the fireboats first directed their attention and succeeded in beaching or sinking all of the barges. Then the fire boats attacked many independent fires which had been ignited by the main blaze; they stood, too, to prevent the spread of the flame on the water side, all the while being in a most precarious position amid explosives. And this danger was far more real than imaginary, for when after many hours work the fire was under control and the boats were returning to their port, the crew of one of the vessels felt their ship lightly hit something under water. Investigation proved that the propeller had scraped against a submerged barge which had floundered from the shock of the explosion and which contained—one hundred tons of dynamite.

Committees Are now at Work Arranging for the

FOURTH CLAIMS EXECUTIVES MEETING

and the

FOURTH ACCOUNTING, OFFICE MANAGEMENT AND STATISTICAL CONFERENCE

of the

CASUALTY AND AUTOMOTIVE ASSOCIATIONS

Time and Place of These Meetings Will Be Announced Later

These are spectacular incidents of the work of the fire boats; in each of these disasters they undoubtedly saved the city many times their cost and upkeep. Yet their more valuable work comes in the ordinary routine of answering alarms and extinguishing small blazes which thanks to their work, never develop into either interesting nor disastrous fires. In the large, they are instruments of prevention.

WE are told that the fire boat idea originated in Liverpool: that a fire started at the end of a jutting pier and that an inshore gale carried the flames and smoke toward the city. The land fire fighting facilities were entirely ineffective; they could not reach the center of the blaze. Every time they attempted to get out to the end of the pier, the heat drove them back. Then some forgotten genius commandeered a tug and with a pump and a few feet of hose on board set about to attack the flame from the water. Some success met his efforts and when the fire was finally extinguished, the city of Liverpool, England, set about to consider the feasibility of maintaining a tug with a pump and hose, so that if the emergency would ever again arise they would be prepared to meet the situation. Thus was born the idea of fire boats.

The type of blaze which gave rise to the idea, still furnishes considerable work for the fire boats of many of the country's harbors. It often occurs that the land fire fighting force is unable to cope with a blaze that is really on land and the city must depend on its fire boats.

Many of the new fire boats throughout the country have distinguishing features which are well worthy of note. The Port Houston was put into service at Houston, Texas in 1925. It is the first fire boat in the country equipped with a Diesel electric engine which it is said "may be started on instant notice. There is no fire to stoke; no steam pressure to build up. The power is always ready, awaiting only the throw of the starting levers.

(Continued on page 31)

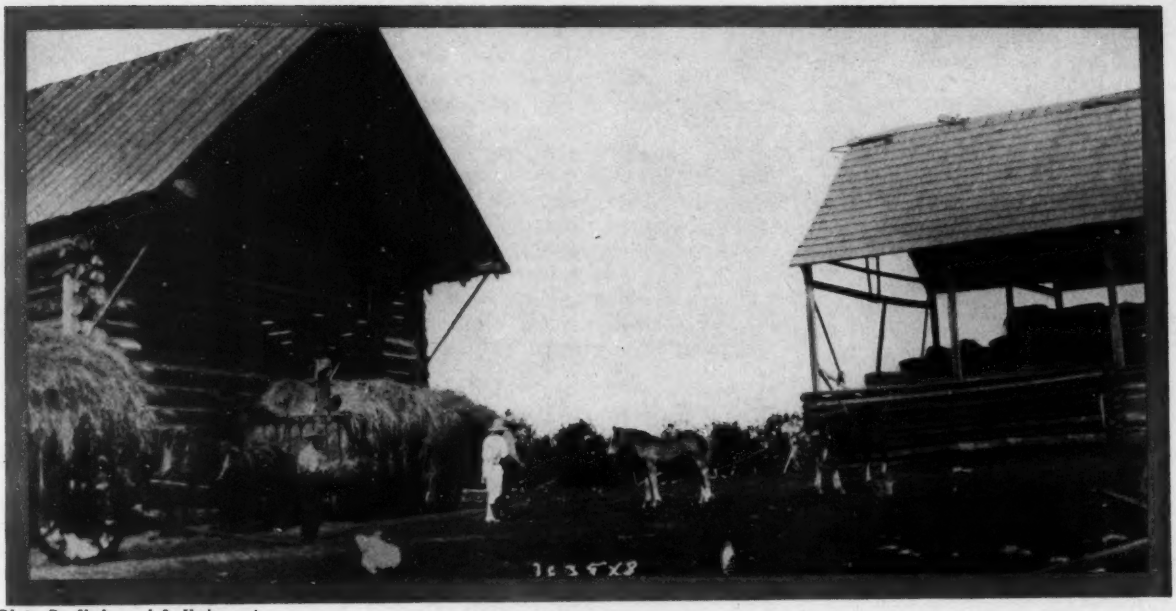


Photo By Underwood & Underwood

Often a Farmer Forgets that the Destruction of His Buildings at Harvest Time Might Have the Effect of Wiping Out His Entire Profit For the Year.

A Decade of Farm Mutual Development

Progress Made in Membership and Coverage of Property in the United States During Period of 1916 to 1926

By V. N. VALGREN

United States Department of Agriculture

PART III

Insurance Costs and Their Distribution

IN THE two preceding articles of this series an attempt was made to set forth the changes in the membership and risks, and in the underwriting practices, of farmers' mutual fire insurance companies in the United States during the decade 1917-1926. Some of the questions dealt with in this, the concluding article of the series, might well have included under "underwriting practices." But a desire to stress the effect of certain practices on cost of insurance and on the equitable distribution of this cost, suggested the choice of the above subhead.

The average annual cost of insurance in these mutuals was found to be about 26 cents per hundred dollars. These average costs by years, figured to the nearest cent, are as follows: 1917, 25 cents; 1918, 25 cents; 1919, 25 cents; 1920, 26 cents; 1921, 27 cents; 1922, 26 cents; 1923, 26 cents; 1924, 27 cents; 1925, 28 cents, and 1926, 26 cents.

The tendency toward an increase in annual average cost indicated by these figures is more remarkable by reason of its smallness than its presence. So much has been heard about the unprofitableness of farm business to insurance companies during the years of post-war deflation that a more formidable increase in these annual costs might well be expected. The increase actually found seems insufficient to take care of the added expenses of operation to be expected from the shrinkage in the purchasing power of the dollar. That these farmers' mutuals, collectively considered, have been highly successful in safeguarding themselves against the moral hazard usually associated with depreciated farm values and shrunken farm incomes, is obvious as well as surprising, and speaks well for the conservatism and practical judgment of their officers and managers. Evidently such mistakes as may have been made by certain companies, have been offset in the average results by improved standards as to risks accepted, and the encouragement of safety measures on the part of others in the group. Scattered organizations for rural fire protection in the business territory of some of these companies may have begun to show results. In some of these mutuals the adherence to the old rates of compensation for officers and representatives, after the insurance in force had been adjusted to the new dollar values, has resulted in a lower expense ratio, but this form of saving, in contrast with a reduced loss rate, cannot be unqualifiedly commended.

THE average cost continues to vary markedly for the various states and sections of the country. Some of the states of the Middle West show average annual costs below 20 cents per hundred. The states of the East and South show in most cases averages between 30 and 40 cents, with an occasional average of about 50 or 60 cents. The Mountain and Pacific Coast states are nearer the average for the country as a whole. To a considerable extent these variations in average costs are due to territorial differences in risks. This view is supported by the fact that the commercial farm rates for insurance in the various sections of the country, show even greater differences. Further details on costs and on many of the other topics here summarized may be found in Circular 54 by the U. S. Department of

Agriculture, which was published a few weeks ago, and in the writer's book, "Farmers' Mutual Fire Insurance in the United States," which may be found in many of the public libraries.

The variations in annual cost are, of course, even more marked when the individual companies are considered. A few scattered companies of substantial size show costs for long series of years of 10 cents on the hundred or even less. It is obvious therefore that the high ratio of fire loss in the United States, as compared with that found in many European countries, is not inherent in the climate or soil of America, but that fire prevention principles properly applied by a company and its patrons will conserve insured property and reduce necessary indemnities for fire losses to minor proportions. That this holds true for larger urban risks as well as for farm property has been amply demonstrated by the Factory Mutuals and by many other companies and groups of insurance organizations.

With minor exceptions the farmers' mutual fire insurance companies insist upon an inspection of property by a representative of the company at the time the insurance is written, and about 23 per cent of these companies, according to the 1926 reports to the Department of Agriculture, aim to make one or more additional inspections during the term of the policy. No corresponding information is available for the beginning of the decade here reviewed.

There was no noticeable change found in the number of companies which classify their risks for premium or assessment purposes, the percentage of the companies that classify being about 31 at both dates. This seems rather surprising since it is generally known that at least some companies have adopted a classification plan for the first time during the decade. More nearly complete returns might, of course, have somewhat altered the results on this as well as on other points. The returns do, however, indicate that a number of companies that at the earlier date had a very rudimentary classification have amplified and elaborated their classification plans.

INSPECTION and classification both have important bearings upon the cost of insurance and its distribution. The primary purpose of the former is to eliminate needless losses and thus reduce the average cost. The more direct purpose of classification is to bring about an equitable distribution of the insurance cost, but it may be expected also to affect the total cost to be distributed. Under the all-one-rate plan there is little inducement for a member to improve his risk. Unless other members do the same, his action will not materially affect his premiums or assessments. In fact the all-one-rate plan enables the indifferent and negligent member to shift to others in the company a part of the insurance cost that should properly be carried by him. Classification on the other hand gives the member with an improved risk a reduced share of the total cost in proportion to the lessened fire hazard inherent in his property, and thus encourages and rewards the improvement of insured risks. The problems of classification inspection were quite fully discussed in the issues of this Journal for March and April, 1927, and will therefore not be elaborated here.

In regard to methods and cost of acquiring business, the prevailing practice continues to be that of charging officers and directors with the duty of soliciting and recommending applications for insurance, and of compensating for this service on the basis of a fixed fee per application. According to the 1926 inquiry about 45 per cent of the companies rely exclusively upon officers and directors for taking applications for insurance, the remaining companies reported relying either in part or wholly upon the services of agents for new business. But in many instances these so-called agents are also officers or directors. In the earlier inquiry 50 per cent of the companies mentioned no agents. It would seem therefore that the practice of employing agents has increased among these mutuals. The tendency indicated may, however, be more apparent than real, as one or more of the officers or directors may have been designated as special representatives of the company in looking after new business.

AS TO method of compensation for taking applications for insurance, 60 per cent of the companies reported in 1926 that they employed only the fixed-fee plan. The corresponding percentage was slightly higher ten years earlier. About one-fourth of the remaining companies use the commission plan, the rest use some combination of the fixed-fee and the commission plans. Those reporting a combination plan showed a slight increase for the decade. The average of the fixed-fee reported was $1.62 per application in 1926, as

(Continued on page 30)

A Well Ordered Farm

is a property most worthy of the best protection that insurance can give it. Mutual companies are available in every part of America to furnish such coverage.

Compulsory Automobile Insurance

Comments on the Present Status of this Much Discussed Question and Examination of the Massachusetts Plan in Particular

By C. A. KULP

Professor of Insurance, Wharton School of Finance and Commerce, University of Pennsylvania

PART II

THIS article is printed as an interesting sidelight on Compulsory Automobile Insurance, showing the reaction of a student of the question, who has considered it from the standpoint of University research.

It cannot be expected that a subject so involved will be free from controversy even in circles which have similar interests, but all readers will admire the evident scholarship with which Professor Kulp presents the results of his study.

2. *Is the Massachusetts Plan the Right One?*

THREE main objections are being urged today against the Massachusetts plan as it stands an accomplished fact. It is said: (1) That the plan has increased automobile accidents, and thus, (2) increased automobile insurance costs, (3) that it exerts a harmful influence on the function of insurance companies and their relations to the insuring public. Each in its turn.

Have Automobile Accidents Increased? There have been published many and conflicting figures on automobile accidents in Massachusetts in the first year of the operation of the new law, 1927. Needless to say, the only authentic data come from Massachusetts. There will be no hesitancy in accepting these figures, for they come, not from Ex-Commissioner Monk, who is an enthusiastic supporter of the law (whose figures, tho ever so correct, would arouse partisan suspicion) nor from any state officer, but from the Massachusetts Automobile Rating and Accident Prevention Bureau, a voluntary association of insurance companies formed for the general purpose of helping to carry out the compulsory law. One of the specific functions of the Bureau is to collect and analyze statistical data produced by operation of the law for rate-making and other purposes. All registration and automobile accident figures cited here are from the records of this association.

Here are the figures for registrations, and for deaths and injuries caused by automobiles for the years 1925-7 inclusive:

	Registrations
1925	774,761
1926	838,111
1927	828,795

Deaths due to automobiles not only declined as a total in 1927, the first year of the new law; relatively, when compared with the number of automobile registrations, they declined also. One striking feature of the first year's operation was the drop in automobiles registered. Altho one of the arguments advanced for compulsory automobile liability insurance has been that the financially irresponsible will be driven from the highway, it is not contended by the Rating Bureau that this was the sole cause of the sharp decline in registrations which took place in 1927, which were almost 10,000 less than in 1926 and 50,000 less than were expected. Altho it is a fact that the decline in automobiles registered was partly due to a decided drop in the operation of light commercial vehicles, motorcycles and ramshackle second-hand cars, other factors were the serious depression in the textile industries of the state and the shutdown of Henry Ford. Perhaps (we ignore the unfounded charge of partisans that there are being operated in Massachusetts 2,000 "bootleg" automobiles) not all of the decline in automobile registration which may be imputed to the new law represents a gain for the state. Worthy enterprisers should not be driven from business, yet it is difficult to comprehend a business so poor that it will not support the extra cost of $30, $52, or $107, the premium in the 3 territories into which the state is divided for a truck of one ton capacity or less. A business on a foundation so shaky as to falter may be an asset to society; it is doubtful. The premium for the light pleasure cars is a great deal less—$16, $22, $29.

At first glance it appears as tho the effect of the Massachusetts law on automobile injuries was to cause them to rise sharply. This rise is especially marked in terms of automobile registrations. Actually the law increased, not the number of automobile injuries, but the number of automobile injuries *reported*. Until its passage there was no way of ascertaining the real number of persons injured. The Massachusetts law has always provided that

Photo By P. & A.

Just What Should Be Status of the Passenger Bus Is a Problem

Photo By P. & A.
Stop, Look, Listen Seems to be the Only Safe Policy at Railroad Crossings

accidents involving injuries of every kind must be reported, but in the absence of a compelling motive, they were reported only in part. In 1926 for instance, 25,351 injuries is the number of which the state has record. Actually the Rating Bureau estimates (based on insurance company experience) that there were more than 50,000 injuries, so that one-half of the total never reached the state Registry, dependent as it was for checking purposes on newspaper accounts. The compulsory insurance law put teeth into the reporting provision, by requiring every person operating a motor vehicle involved in an accident in which a person is killed or injured, to report immediately in writing to the state Registrar. Penalty for non-compliance is revocation or suspension of the license of the operator.

Naturally the number of accidents reported took a jump under the new law, especially since a second motive, perhaps still more compelling than the first, re-enforces it. Every owner is now insured, every insured is required by his policy to report every single accident (whether there appear to be injuries or not), every claim. The Registrar thus has an excellent check on the faithfulness of observance of the original accident-reporting law, which still applies, and which provides a second check on the careless and the vicious. So that, far from causing an increase in the number of automobile injuries, it seems that the result has been a decrease. Too much reliance must not be placed on the figures of this single year, even when combined with those of previous years, but it is apparent that if the old system of reporting had carried over into 1927 the number of injuries would have fallen far below those of 1925 and 1926.

WE HAVE in this section, it will be noted, been discussing *accident numbers,* not *insurance costs.* The two are not synonymous. Accident numbers may rise and insurance costs fall, or total accidents decline while insurance costs rise. So that even if it is true that the total of Massachusetts automobile accidents has not risen or has even gone down it does not follow that total automobile insurance costs will fall also. Four factors may operate to cause even a falling accident total to result in a higher insurance cost figure: (1) The Severity rate of automobile accidents may be increasing, that is, there are not more accidents but more serious ones, (2) the courts and juries (or the insuring companies) may be granting more liberal awards or settlements for the same kind of case rated by severity, (3) the courts are perhaps being asked to pass on an increased number of dishonest, fictitious claims and the companies to pay them, (4) the net result of introducing new members into the insurance system may be to increase the hazard and thus the insurance cost. All of these factors are extremely important in an analysis of automobile insurance costs as contrasted with accident totals as such. Even the matter of fictitious claims is of no great importance in a consideration of accident figures. The fictitious claim in automobile liability insurance is not so much the claim manufactured out of nothing as a big claim made out of a minor accident. The fictitious claim problem is more nearly connected with the question of insurance cost.

Have Automobile Liability Insurance Costs Increased? It is here especially that an out-and-out answer would be premature. The then Commissioner of Insurance of Massachusetts, Wesley E. Monk, faced a delicate and responsible task when he set about determining what a proper set of premiums for the new insurance should originally be. None of the experience accumulated under the old system of voluntary insurance was squarely applicable. Automobile experience, ripening very slowly, the latest data even for the old system were for 1924. The premiums finally decided upon for 1927 were naturally experimental and resulted in a reduction of manual rates for Metropolitan Boston of about 25 per cent, and a smaller reduction outside this area. A substantial part of this reduction was expected to be justified by the reduction of allowance for commission to 15 per cent (the stock companies for the entire United States spent in 1927, 21.4 per cent).

When the time came to make premiums for 1928 it was decided by the governing committee of the Rating Bureau "that the general level of rates does not appear to be radically wrong." Acting upon this advice, Commissioner Monk left the premiums, with the exception of those for taxicabs and driverless cars, precisely as they were. Properly pointing out that completely statistical rates for automobile insurance under the new plan must await further experience, he placed chief dependence nevertheless on the experience since January first 1927, which had developed a projected loss ratio (for 1927) of 63.7 per cent. Allowing for some revision of this percentage, the rate level did not seem to be seriously deficient, as the rate structure permits a loss ratio of 59.8 per cent.

Since the premium rates for the first year of operation, 1927, had to be established before the law went into effect and those for 1928 in the summer of 1927 (before the law had been working a full year), the first real check on premium adequacy could not be made until the

latter half of the present year, 1928. By this time the experience for 1927 would be known fairly definitely and the new law could be judged on its own results. Results up to this time had naturally been inconclusive, both sides claiming victory on the showing of incomplete returns. The new schedule of Commissioner Monk was awaited with an interested paralleling few events in the history of casualty insurance.

BRIEFLY summarized here are the conclusions and recommendations of Commissioner Monk prepared for transmissal with the proposed 1929 schedule of rates.[1] Taken as a whole, without separating experience by classes of vehicle or by geographical area, premiums charged in 1927 were insufficient to pay automobile insurance company expenses and losses for business in Massachusetts. Earned premiums for the year were $16,806,377, losses and expenses $18,440,209, underwriting losses $1,633,832, the difference between the two. Compared with an expected loss ratio of 59.8 per cent, the actual ratio of losses to earned premiums was 68.7 per cent.

So much for the aggregate picture, but how far is it possible to tear down these totals in order to find their causes? Granted that there ought to be an increase in the *average* automobile premium in 1929 over 1927, does this mean an increase over the rates charged under the pre-compulsory system? To what factor or factors must the blame for the general increase of 1929 over 1927 rates be laid?

Because of the reduction in the number of rate-making territories made by Commissioner Monk at the time the 1927 rates were promulgated (from 8 to 3) it is not possible to make a comparison of premiums before and after the law for all sections of the state. Fortunately, however, such a comparison is possible for private passenger cars for those areas of the state developing under both systems the greatest automobile accident losses and having the greatest insurance costs, Boston and 17 of its leading suburbs (formerly Territory I.) The table shows the premiums for pre-compulsory insurance in Column I; premiums under the 1929 recommended schedule appear in Columns II and III. Those in Column II represent the premiums recommended for the 7 highest cost cities (1927 experience) in the former Boston-and-environs territory (proposed new Territory I). Those in Column III show the proposed premiums for the remainder of this territory (new Territory II). 1927 premiums are added in Column IV for comparative purposes.

See Table Below

The net result of the proposed new rates is to raise the cost of private car insurance for the inhabitants of Boston, Chelsea, Revere, Somerville, Cambridge, Everett and Winthrop (new Territory I), 27, 4, and 13 per cent depending on the size of the car; and to lower it 17, 32, 31 per cent in the remaining eleven suburbs (new Territory II).

This is as complete a comparison of before-and-after premium costs as is possible because of the changes in territories. It is not finally conclusive but it suggests a number of very important considerations which cannot be ignored. First is this, that it is perfectly possible to show that the automobile insurance companies had a deficit in earned premium income in 1927 of over $2,000,000 (Monk's estimate) the reoccurrence of which must be prevented by increasing premiums, without showing that the necessary increase will raise premiums above the pre-compulsory level. In fact as we have seen

Type Car	I Pre-Compulsory Premiums (Old Terr. I)	II 1929 Proposed Premiums New Terr. I	III 1929 Proposed Premiums New Terr. II	IV 1927 Premiums Old Terr. I)
W	$41	$52	$34	$29
X	50	52	34	37
Y	61	69	42	45

The tree climbing auto is not new to the world but this one is unique, at least in its effort to do the job backwards. However there is little of humor in the auto accident situation. The motor car steadily claims its victims, and the menace must be met with intelligence.

Photo By P. & A.

(1) The rates finally adopted by Acting Commissioner Linnell are 10% below the level of this schedule.

decreases may even be possible in districts which deserve them. This leads to a second consideration; while the 1927 rate structure as a unit produced too few dollars in premiums, separation of the experience indicates that the fault lies primarily with the private passenger car as contrasted with the commercial vehicle, and with the city rather than the country. For example, the loss ratio for 1927 business for all private passenger cars was 73.5 per cent, for all commercial automobiles 58.2 per cent (expected 59.8 per cent). Clearly the trouble here is with the private passenger business. That this trouble is caused primarily by city automobiles is shown by the actual loss ratios for all insured automobiles in the 3 territories of the state: Territory I, Boston and 17 suburbs; Territory II, Fall River, New Bedford, Springfield, Worcester, etc.; Territory III, remainder of the state. The ratios are respectively 76.4, 66.6, 61.3 per cent, a progressive trend toward lower costs from city to country. Accordingly the changes recommended for 1929 are principally for private passenger cars in Territory I. Other changes for private cars are relatively slight.

COMMERCIAL cars are rewarded for their excellent record by a reduction averaging 3 per cent on all classes. Rates for electric automobiles have not been changed.

What is the present status of compulsory automobile insurance? We shall pass over without discussion the unfortunate political complications which appear to be a part of the situation, for our present purpose passing over but not forgetting that political considerations perhaps always will be tied up with every activity of the state. Does the present controversy prove that the compulsory plan is unworkable? In the writer's studied opinion, it does not. On the whole here is the situation. It is demonstrated that the companies were right when they predicted that the 1927 passenger car rates were too low, but it is not yet proven that adequate rates will be higher than under the old system. Also to balance this, it appears that commercial rates are adequate, likewise those for electric vehicles. The total number of automobile accidents has not increased as the companies claimed they would; nevertheless, it is true that costs were higher than expected. This deficit in premiums can be due only to one or both of two factors. Either the 1927 tentative rates were pitched too low for the hazard existing at the time they were set or the compulsory principle has introduced a very rapid and considerable change in hazard since.

All other factors must be eliminated because they are not effective except over a period of time. Certainly the severity rate for automobile accidents did not take a tremendous jump in one year's time, and if it did, it would be improper actuarilly to assume continuance of such a rate of increase in the years to come. Perhaps the courts and juries in one short year's passage have suddenly become more reckless with other people's money than ever before. This cannot be ascertained at the present time; and if such a change has taken place it may be reduced to terms of the second of our two factors: change in the hazard assumed by the insurance company, which properly includes not only the chance of accident but the chance of too liberal settlement or award. Most important in the matter of increased hazard, however, is the effect of the introduction of many new insureds into the insurance system. There is no reason to believe that their admission has increased the hazard of honest accidents; the bulk of them are rural and are exposed to lesser risk than their urban neighbors, as is indicated by the actual loss ratios already cited.

The hitch lies in the possibility of dishonest accidents, particularly of big claims made out of little injuries. That this possibility might create a problem was to have been expected and was foreseen by Mr. Monk as early as September 1926. On another page of this article the number of automobile injuries reported to the state (including deaths) is shown as 31,721. Yet in 1927 there were presented to the companies doing business in Massachusetts a total of 48,721 claims. This discrepancy can be due only partly to the ignorance of automobile owners of the provisions of the accident reporting law; primarily it must be due to the filing of fictitious and exaggerated claims. Fil-

(Continued on page 28)

Photo By P. & A.

Will Compulsory Insurance Increase or Decrease Accidents Such as this Spectacular Smashup?

Water Supply

(Continued from page 9)

that it supplies and to have the branch lines short. In the center central scheme, which is the most desirable one, the riser is near the center of the building, the main feed lines run lengthwise of the building, near the center, and the branch lines run across the short dimension of the building. In this case the cross lines cover only one-half of the short dimension of the building. In the side central scheme, which is perhaps the next best, the riser is near the center of one of the long sides of the room and the main-feed lines run lengthwise of the room but at one side. The only unapproved schemes are those in which the riser is located in the corner of the building thus giving end side or across end feed.

For small buildings this scheme of feed lines is of little importance and where there are less than 50 heads on a floor, it need hardly be considered. It is a feature that usually takes care of itself, for it is more economical for the sprinkler contractor to lay out the equipment in an approved way because it takes a smaller amount of the larger pipes. It is, however, always desirable to arrange the piping so that there will not be over 8 heads on a branch line.

There should be a separate riser for each building and for each fire section in a building. Stair and other similar towers should be piped as though they were all one floor. That is, the sizes, beginning at the top, should be increased as each head is added. A fire in such a place is liable to open the heads on all floors.

Except where tanks on the building are the only automatic supplies to the system, the supplies should feed in at the bottom of the riser. This is required so that the valves, including gate valve and alarm valve or dry valve, can be conveniently located at the lower level and so that one gate valve may be arranged to shut off all the supplies from the system.

AS A general proposition the fewer valves the better. A multiplicity of valves makes a complicated system and gives more chance for a valve being closed by mistake. In risks where the contents are very susceptible to water damage, inside valves may be desirable in addition to post valves because in case of emergency they can usually be closed more quickly. In most risks the single post valve located outside the building is sufficient. The best arrangement of valves inside a building will vary greatly according to circumstances and but few general rules can be laid down. Where possible it is desirable to locate all controlling valves, alarm valves, dry valves, etc. together in a fireproof room accessible from outside.

The concluding section of this article will deal with different types of water supplies.

SPRING MEETINGS

National Association of Insurance Companies and Automotive Mutual Mutual Casualty Companies National Association of

Chamberlin-Vanderbilt Hotel
Old Point Comfort-Va.
April 25-26-27
1929

Photo By Underwood & Underwood

Beyond The Menace of The Fire Itself, The Firemen Must Watch Constantly For Falling Walls

Compulsory Auto Insurance

(Continued from page 26)

ing of a claim is not equivalent to the receipt of check for settlement, nevertheless here is the greatest weakness of the Massachusetts law. To survive, the law must be strengthened at this point. There is nothing inherent in the compulsory idea that makes the fictitious claim inevitable. There is no reason why an insurance company should be less watchful, less insistent on proof of negligence, in compulsory than in voluntary insurance. There is no reason why court and jury should be more liberal in Massachusetts than in any other state. Some means must be devised to make the payment of a dishonest claim difficult to secure, if not impossible. One plan proposed is that of the State Treasurer, which provides that all reports of settlements of automobile liability cases must be filed with the State Insurance Department, for exhibit to the public. Whether the benefits of publicity alone will be thorough enough to serve the purpose is highly doubtful.

Does the Massachusetts Plan Hurt the Companies? The insurance companies feel that they are being hurt or will be hurt by compulsory liability insurance in two ways. They fear that they will have to accept every applicant for insurance; they fear as we have seen that a state full of insured owners will result in an increase in the number and size of claims. Both are serious possibilities. If the insurer *must* take every person who asks for a policy, grave consequences are created. The insurer can no longer exercise underwriting judgment, the company will no more be a group of select risks. Altho insurance company selection of risk is at best a negative affair (it begins to operate only after the insured has exercised self-selection) insurance cannot endure without it. Its elimination would put the great majority of the honest and careful at the mercy of the dishonest and careless.

What do they do about this in Massachusetts? Commissioner Monk reports that the state board of appeal, in beginning its work had no preconceived policies. It laid down as its first principle the rule that the record of an automobile owner under the old motor laws was to be no handicap to him under the new. It is reported that there were in 1927, 64 cases in which companies cancelled insurance. Of these 28 were upheld by the board, 36 were reinstated. One definite principle at least has been evolved, that no company need retain as a risk a person who has operated an automobile while drunk or for an unlawful purpose. The figures themselves are not particularly significant — they show, however, that a certain change has taken place in the status of an automobile liability insurer in Massachusetts. The companies are not entirely free in the conduct of their underwriting. To refuse or cancel too often is to invite the critical scrutiny of the state; to leave the state is hardly a remedy for every withdrawal makes the demand for a state fund the more certain. It is not pleasant to think that a state board has the power to make you accept risks you believe are not satisfactory; yet, given a system of compulsory insurance, some court of appeal from the decision of the insurer must be provided. As time goes on and the Rating Bureau gathers individual records for every owner in the state (these records are at the joint service of all companies) this machinery of appeal will no doubt cause less feeling, and thru the development of a body of precedent, become more a routing matter, less a personal one.

COMMENT on the second anxiety of the companies, that compulsory insurance will encourage a raid on their treasuries, has already been offered in the discussion of insurance costs. It is a fact that juries think that insurance company money is anybody's, that is, everybody's money and are accordingly free with it. For this reason in certain states judges are required to order a non-suit in a damage case if mention has been made that the defendant is insured. What will happen when every owner is insured?

The evidence is not all in, as we have remarked, but just as yet there is nothing to be seriously disquieted about. If Massachusetts can maintain for the city of Boston and environs a gross premium level no higher on the average than the old, on this basis at least the compulsory law is not a failure. Malingering is a problem, and the friends of compulsory automobile insurance will best serve their cause by admitting the problem and by settling to work to get a solution. One important influence may be counted upon increasingly to reduce malingering. In this piping days when every man owns a motor and many men two, after every owner is insured, juries will perhaps gradually achieve the social concept of insurance which is obscured under the present system. When only thirty per cent of automobile owners voluntarily take out liability insurance, it is hardly to be expected that the remaining seventy will take the same view of the automobile liability insurer as if they also had something at stake.

Just His Size

"Got anything snappy in rubber bands?" asked the boy from the big town.

"No," said the salesgirl sweetly, "but we've got something awfully catchy in fly paper."—*Capper's Weekly.*

Waiting List

He—"Darling, will you marry me?"

She—"Not yet, old thing; I'm booked solid for three years."—*Life.*

Queered the Game

Jim—"Did the honor system work well in your college?"

Joe—"Yes—until some darn sneak went and squealed on us."—*Life.*

Taking a Dare

Solicitor—"Would you indorse our cigaret for two thousand dollars?"

Celebrity—"For two thousand dollars I'd smoke the darn things."—*Life.*

That Vacant Chair

Bachelor Girl—"What do you miss most now that you're married and settled down?"

Wife—"My husband."—*Life.*

The Kind-Hearted Hen

A grasshopper jumping his best
Was advised by a hen to take rest.
"We must save your poor legs,"
Said the layer of eggs,
As she swallowed him down with great zest.—*Kablegram.*

Which Club Did He Use?

"He claims his wife was intractable, your honor, so he beat her into subjection with a golf club."

"In how many strokes?" asked the judge.—*Tit-Bits.*

The Wide Open Season

It is related, in all seriousness, that a hunter recently shot a horse, mistaking it for a rabbit.

Persons owning elephants are hereby warned to keep their pets in the house when this guy goes gunning for cats.

Co-Insurance

(Continued from page 12)

nation in taxation as between different property owners. Furthermore, the city would fail to realize the amount of tax required to balance the budget if each were allowed to assess himself as he so desired.

An analogous situation would exist in fire insurance if we assume the rate of fire insurance to be fixed and equal for all similar risks and then allow each person to buy whatever percentage of coverage he desired. The insurance companies would find themselves without a large enough fund to meet their losses, and those who contributed to this fund would have contributed sums which were discriminating in favor of some and against others. In other words, the contributions would be inequitable. Moreover, we believe it to be sound practice, in the long run, to purchase insurance coverage up to something like eighty per cent of the value of the property.

WE MAY now sum up in a few words the essence of the coinsurance proposition. (1) The coinsurance clause embodies an agreement between two parties—the insurance company and the insured. (2) The consideration constituting the basis of this agreement is what we may call a reduction in rate charged for the insurance coverage, for without coinsurance the rate for a small percentage of coverage would necessarily be substantially greater than it is under coinsurance practice. (3) The essence of the agreement is that the insured shall undertake to maintain insurance up to an agreed percentage of the fair value of the insured property. (4) The insured is free to carry as much or as little insurance as he wishes. If, however, he fails to carry the agreed percentage he has to bear an equitable proportion of any loss that may be brought about by fire. (5) The insured is not penalized in the event of a loss if he carries the amount of insurance he *agrees* to carry; nor is he penalized if the amount of the loss equals or exceeds the agreed percentage of the *value* of *the property*. (6) The usual percentage of insurance specified to be carried is eighty per cent of the value of the property. (7) The operation of the principle of coinsurance does not mean as many think it does, that the insured must always suffer a percentage of the loss. (8) Considering the collection of fire insurance premiums in the nature of a tax, the operation of the coinsurance clause is equitable.

Fire In A Tubogenerator

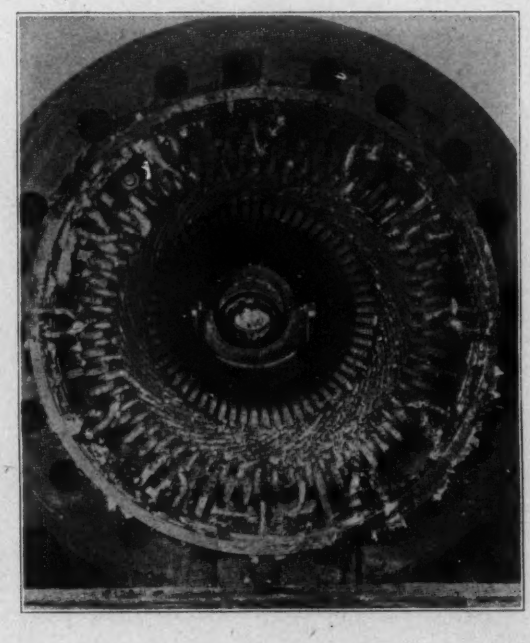
(Continued from page 11)

there is actual fire, and only after main and field switches have been opened.

Differential relays arranged automatically to open the main and field switches when short circuit occurs are also necessary protection. Their time of operation should be as short as practicable. A number of fires have been prevented by the quick operation of relays following short circuit.

Carbon dioxide in permanent piped systems will no doubt prove with practical experience to be the best protection for turbogenerators having enclosed recirculating air systems. In such installations perforated pipes are an added protection obtainable at slight expense. Turbogenerators which do not recirculate the cooling air would need tight, automatic, and reliable dampers to confine the carbon dioxide gas, making a more complicated and difficult system whose worth is yet to be proved by practical experience. The perforated pipes are considered the surest form of protection for this type of generator and for hydrogenerators so designed that the end windings are not accessible to hose streams.

Small hose and carbon tetrachloride extinguishers should also be provided in power houses for general use. *Hand carbon dioxide extinguishers* are good for small fires easily approached, such as in small motors or switchboard wiring. *Foam extinguishers* should be on hand for oil fires but should not be used until the current is shut off.



The Damaged Stator

The short circuit occurred near the bottom of the coils. Water applied through perforated pipes would quickly extinguish burning insulation before enough heat is developed to crack the metal parts or injure the rotor.

Pity the Poor Plumber

HERE is the story of a plumber who did not forget his tools. We wonder if the sledge hammer is a regular part of his kit.

The gentleman in question was called in to flush out a floor drain at the Arthur A. Phelps Building in Chicago. Unsuccessful in forcing the water through the drain, he looked for the main sewer clean-out hole and found a pit with the word "sewer" marked on its iron cover. Entering the pit, he tried to take out the bolts holding the cover on what he thought was a 4-inch clean-out hole, but which proved to be the check valve on a fire department connection.

The nuts were somewhat rusted and did not turn readily. He decided that the easiest and quickest way to gain access was to break the iron cover with a sledge hammer. As he did so, a 4-inch stream of water under eighty pounds pressure gushed straight upward and struck the basement ceiling.

Employees slid the manhole cover back into place and one of them tried to keep it there by standing upon it. Meanwhile other employees shut basement valves in this and the adjoining building, but the flow did not stop. Then they went up into the stair tower and closed the proper valves, one at the gravity tank and the other at the pressure tank. Meanwhile nearly all the water had discharged from the 4500-gallon pressure tank.

By this time, the plumber began to realize that he had broken into the fire-protection system. He left at once to obtain a new check-valve cover, and five hours later had not been heard from.

Fortunately the water damage was slight. A fire-department station one block away was notified of the crippled protection and in addition watchmen made half-hourly rounds until the sprinklers were again in service the following morning.

Farm Mutual Development

(Continued from page 22)

against $1.28 in 1916. The most common fee according to the 1926 replies was $2.00, nearly one-third of the companies reporting this amount. A fee of only $1.00 was paid by somewhat more than one-fourth of the companies, while almost exactly another fourth paid a fee of $1.50. Most of the remaining companies paid either $2.50 or $3.00. A very few allowed fees of less than one dollar, and even fewer allowed fees exceeding $3.00 per application. The commission and combination plans are so varied that no summary in brief compass can be made.

There is good reason to believe that the predominance of the fixed-fee plan of compensating for new business, has been one factor in the success of these companies, in so generally eliminating over-insurance, with its attendant moral hazard. This plan, which would scarcely prove practicable in urban business with its great variations in size of risks, has the marked advantage of leaving the farm agent disinterested in the amount of insurance written on a given risk. The welfare of the company and of the insured are his only concern in arriving at appraisal values and the proper amount of insurance.

Among the most noticeable changes in the methods of collecting the insurance costs, are an increase in the number of companies that rely on an advance premium for the full policy term, and a tendency toward annual assessment on the part of the larger number who continue to assess at intervals during the term of the policy. About 11 per cent of the companies reported in 1926 that they operated on the advance premium plan as against less than 3 per cent in 1916. Among the remaining companies all of which rely wholly or in part on assessments during the policy term, almost exactly one-half reported in 1926 that they levied one assessment per year. In two extreme cases twenty assessments had been levied during a five-year period. However, cases of less than five assessments for the five-year period were more numerous than the cases in which more than five were collected. That the plan of levying one assessment per year has been growing in favor among the companies that continue to rely on collections during the policy term, was clearly indicated by the reports. This means no doubt that the great majority of these assessment companies have outgrown the original idea on which many of them started out, namely, that of collecting after every material loss enough only to pay such loss. Any substantial growth of a company will, of course, soon demonstrate the impracticability of this plan, and the annual assessment plan is a logical development.

CLOSELY related to the frequency of assessments is the question of a definite plan with reference to surplus or reserves. The plan of so adjusting the assessments that the company will gradually build up a reserve against special contingencies, is noticeably gaining in favor. Only by such a plan is it possible to bring about a reasonable equalization of assessments from year to year. In 1916 less than one-fourth of the farmers' mutual fire insurance companies reported having any definite plans with reference to reserves, while in 1926 two-fifths placed themselves in this group. Other companies had larger or smaller reserves on hand, but had no definite plan as to amount of reserves to be normally maintained. It is freely admitted that the real strength of these mutuals lies in the loyalty of their memberships, rather than in the amount of their reserves. But this very loyalty is usually enhanced by the feeling that the company is prepared to meet even an unusual series of losses without any discouraging sudden rise in the assessment rate. A very large reserve for a company that operates in typical farm territory, and limits itself to segregated farm risks, is not necessary. For the company so situated, and of normal size, it is quite generally conceded that a reserve of two or three thousand per million of insurance is ample.

The particular period under consideration has been one of peculiar temptation and trial, by reason of the sudden inflation in values during and immediately after the war, followed by an equally spectacular and highly distressing period of deflation. That these farmers' mutuals have not only survived, but have come through with increased strength, relatively as well as absolutely, and with a cost record for the group that has remained so low and so nearly constant, seems to call for no small amount of admiration and respect, notwithstanding that the records of numerous individual companies indicate that much greater achievements are possible for the group as a whole.

Ohio State Convention

A state convention of more than usual importance was that held in connection with the Golden Jubilee of the Federation of Mutual Insurance Companies of Ohio in Columbus on February 19th and 20th.

This Federation is believed to be the oldest mutual association in the United States, and can point with great pride to its record during the half century of its existence. It has taken the lead in sponsoring much legislation favoring mutual insurance, and a considerable number of its achievements in this regard have been used as models by other states.

A high point in the program was a memorial for the iate O. B. Young, former president of the Ohio Federation.

Others on the list of speakers were D. C. Bundy, also a former president, who spoke on "Looking Back Half a Century," and Harry Cooper, Secretary of the National Association of Mutual Insurance Companies who took as his subject "The Spirit of Mutual Insurance."

The round table discussions under the chairmanship of Judge D. L. Gaskill, developed into a veritable mutual school of instruction, and various addresses concerning organization, legislation and other matters rounded out by messages of congratulation on the Golden Jubilee completed the program.

At the banquet which followed, some two hundred delegates heard addresses by Governor Myers Y. Cooper, Ohio's new executive, by Milo A. White, President of National Association, also the recently appointed Insurance Commissioner of Ohio.

The following officers were re-elected:

President—A. F. Tabler, Napoleon
Vice President—R. E. Sawyer, Shelby
Secretary-Treasurer—A. F. Little, Covington

He put on speed, thinking he could beat the train to it."

"Did he get across?"

"He will as soon as the tombstone maker has it finished."—*Boston Transcript.*

Teach—"In which of his battles was King Gustavus Adolphus of Sweden slain?"

Pupil— I'm pretty sure it was the last one."

Boats for Fire Fighting

(Continued from page 20)

The first reports on the "Port Houston" have been highly enthusiastic.

"When going to a fire of towing vessels out into the stream, the full power may be diverted by the propelling motor. In responding to its first fire, which was at a coal dock, a distance of approximately two miles from its station, the vessel, within twelve minutes from the time the alarm was turned in, was in position alongside the wharf with its full force of water playing on the fire.

"Two independent screws enable the Port Houston to spin about in its own length. There are thirty graduated speeds from zero to full and the entire power of the engines may be utilized for the pumps.

"During a fire the operating cost of fire fighting equipment is a forgotten item; but during the long periods of waiting, such equipment 'eats its head off'. There is no return for the outlay necessary to keep the vessel ready for instant action. This is particularly true of a steam vessel. The constant consumption of fuel necessary to keep the steam up in the boiler is an important item in operating cost for which their is no return. With the Diesel electric fire boat, all such costs are eliminated. The operating costs are practically zero until the fire begins."

It yet remains to be seen if these claims made for the Diesel engine will justify themselves. There is as yet no available data as to the performance of the Port Houston over a period of time, but if the claims made for it can be justified by its performance we may expect that it will set the type for future fire boats.

But from many points of view the fire boat which patrols the harbor of San Diego is the most interesting in the country. It was built more than half mile inshore by the members of the San Diego fire department who are professional firemen and not ship builders. Yet it is a sturdy craft capable of pumping 1,500 gallons of water a minute at 125 pounds pressure. Once the "San Diego" was caught with a disabled engine when an alarm was turned in. They started their fire pumps going, pointed a two inch nozzle at an angle towards the water, and pushed the boat to the fire with the force of the water from their pumps.

Some Food, Please

Dietitian—For your case I shall prescribe lettuce leaves without oil and a glass of orange juice.

Mrs. Overweight—And do I take this before or after meals?—*Capper's Weekly.*

Back Number

A Londoner took an American to see "Hamlet." "You sure are behind the times here," remarked the American. "I saw this play in New York four years ago." —*Christian Register.*

Legislation

Activities of Various Legislatures As Affecting Mutual Insurance

Michigan

Senate 178. Introduced by Wood. Amends the Anti-Rebate Section of the Insurance Code by providing that nothing therein contained shall be construed to prevent the payments of dividends in the normal course of business by incorporated insurance agencies to any of its stockholders, notwithstanding the fact that such agencies may receive insurance premiums from such stockholders. Referred to Committee on Insurance.

Senate 244. Introduced by Cowan. Revises the State Insurance Code, tightening departmental supervisory powers, creating new regulations for mutuals and reciprocals; changing investments permitted, legalizing agents' qualifications test and making numerous other changes. Referred to Committee on Insurance.

Missouri

House 219. Introduced by Miller and Reed. Amends Section 6392, Article 14, of Chapter 50 of the Revised Statutes of Missouri, 1919, relating to taxation of insurance companies and associations, by providing that every city in the state having an organized paid fire department under its direction and control and an existing board of trustees and a firemen's pension fund, is hereby authorized and empowered to levy and impose, in addition to any and every other occupation tax, an occupation tax on every insurance company and association and on every reciprocal or interinsurance exchange, of not to exceed two per centum of the premiums or deposits received or collected by such company, association or reciprocal insurance exchange.

Senate 254, introduced by McCawley and Willard is a companion bill to House 219.

Senate 253. Introduced by McCawley and Willard. Amends Article 27 of Chapter 72 by adding Section 9078 (a) which provides that in addition to the other sources authorized by law from which money may be derived in any city in this state for the creation, and maintenance of a firemen's pension fund, there may be paid into such fund such money as may come into the municipal revenue of such city as an occupation tax upon insurance companies and associations and reciprocal insurance exchanges, of not to exceed 2% of the premiums or deposits received or collected by such companies, associations and reciprocal insurance exchanges for insurance on property located within such city against fire, tornado or explosion.

Senate 667. Introduced by Brogan. Amends Article 7, Chapter 50 Revised Statutes of Missouri, 1919, entitled "Mutual Insurance Companies other than Life and Fire," by adding a new section which provides that the taxable premiums or premium receipts of any mutual insurance company organized in or admitted to this state under the article for the purposes of taxation under any law of this state shall be the gross premiums received for direct insurance upon property or risks in this state, deducting amounts paid for reinsurance upon which a tax has been or is to be paid in this state, and deducting premiums upon policies not taken, premiums returned on cancelled policies or any refund made to policyholders other than for losses.

North Carolina

Senate 83. Introduced by Cannaday and Haywood. Provides a system of workmen's compensation for the State of North Carolina. Every employer who accepts the provisions of the Act shall insure, and keep insured, his liability thereunder in any authorized corporation, association, organization, or in any mutual insurance association formed by a group of employers so authorized, or shall furnish proof of his financial ability to pay direct the compensation as provided for in this Act. No corporation, association or organization shall enter into any such policy of insurance unless the form shall have been approved by the insurance commissioner. The rate charged by all carriers of insurance shall be fair, reasonable and adequate, with due allowance for merit rating; and all risks of the same kind and degree of hazard shall be written at the same rate by the same carrier. No policy shall be valid until the rate thereof has been approved by the Commissioner of Insurance nor shall any such carrier write any such policy or contract until its basic and merit rating schedules have been filed with, approved, and not subsequently disapproved by the commissioner of insurance. An administrative fund is created for the purpose of carrying out the provisions of the Act by levying upon each carrier insuring employers under the provisions of this Act at the rate of 2½% of the amount of such premiums which tax shall be in lieu of all other taxes on such premiums. Such insurance carrier shall be credited with all cancelled or returned premiums actually refunded during the year of such insurance. Passed Senate with amendment by a vote of 40 to 6. Reported favorably in the House. At the present time North Carolina has no workmen's compensation act.

The Threshold of Saving

Mutual Insurance

Mutual Insurance involves more than a return of that portion of premiums which is not required for the payment of losses, operating expenses, and for the accumulation of reserves. - - - -

It involves an obligation on the part of policyholders to be mutually careful in avoiding losses. - - - - - - - - -

This principle is unique with Mutual Insurance. It is the reason why Mutual Insurance is safer — why it is more economical. - -

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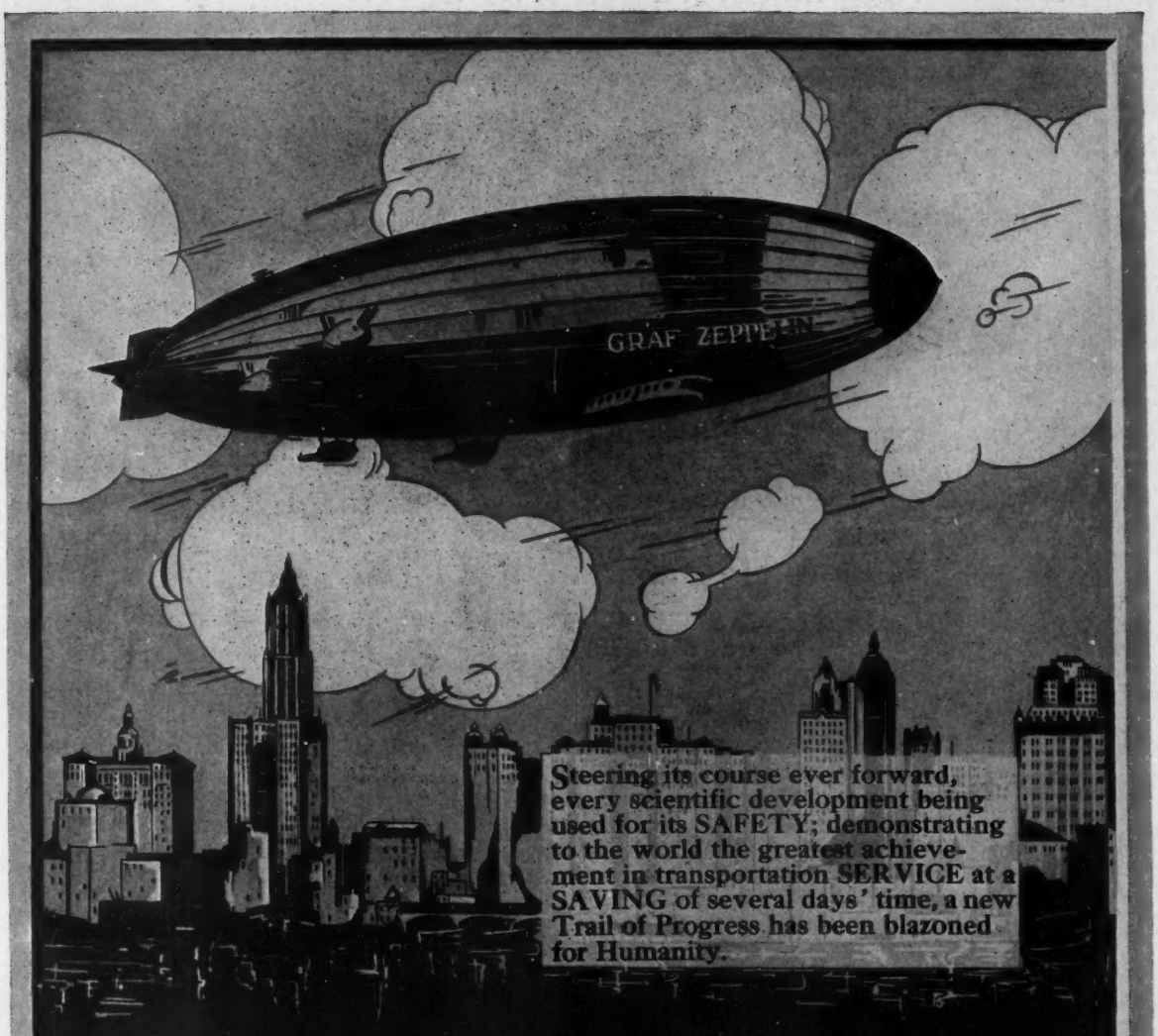

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with

SAFETY SERVICE SAVING

Combined Statement of Companies

Comprising the "FEDERAL" Group

December 31, 1928

Combined Assets - - -	$11,350,590.51
Combined Liabilities-	6,853,640.05
Combined Surplus - -	4,496,950.46

Dividends Paid to Policy Holders Since Organization

$26,996,508.51

Federal Hardware & Implement Mutuals

Retail Hardware Mutual Fire Ins. Co.
of Minneapolis, Minnesota

Hardware Dealers Mutual Fire Ins. Co.
of Stevens Point, Wisconsin

Minnesota Implement Mutual Fire Ins. Co.
of Owatonna, Minnesota

LUMBERMENS MUTUAL CASUALTY COMPANY

Seventeenth Annual Statement

JANUARY 1, 1929

ASSETS:

U. S. Government Bonds	$ 1,327,120.00
State, province, county and municipal bonds	2,884,810.00
Federal Land Bank and other bonds and stocks	1,039,552.00
First mortgage loans on real estate	1,128,500.00
Cash in banks and on interest	2,068,872.57
Premiums in transmission	906,685.51
Due from reinsured companies	773,239.13
Accrued interest	76,158.54
Total cash assets	**$10,204,937.75**

LIABILITIES:

Reserve for losses	$ 4,008,651.36
Reserve for unearned premiums	3,289,774.52
Reserve for taxes and expenses	378,911.73
Reserve for contingencies	1,000,000.00
Total liabilities and reserves	$ 8,677,337.61
Net cash surplus	1,527,600.14
Total	**$10,204,937.75**

JAMES S. KEMPER, President

Mutual Insurance Building — Chicago, U. S. A.

Atlanta	Chattanooga	Los Angeles	New York	San Francisco
Albany	Columbus	Milwaukee	Omaha	Seattle
Baltimore	Detroit	Minneapolis	Philadelphia	St. Louis
Boston	Kansas City	Newark	Pittsburgh	Syracuse
Buffalo				Toronto

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